ROYAL STATISTICAL SOCIETY
6 JUN. 98

REPORT
ON THE
HEALTH OF THE CITY
OF
BIRMINGHAM,
FOR THE YEAR 1897.

ALSO,

ON THE PROCEEDINGS TAKEN UNDER THE ACTS FOR THE
PREVENTION OF ADULTERATION
OF FOOD AND DRUGS,

BY
ALFRED HILL, M.D., F.R.S.E., F.I.C
Past-President of the Society of Medical Officers of Health; Past-President of the Society of Public Analysts; Late Examiner in Public Health to the University of Aberdeen; Fellow of the Sanitary Institute; Fellow of the College of State Medicine; Fellow of the Incorporated Society of Medical Officers of Health;

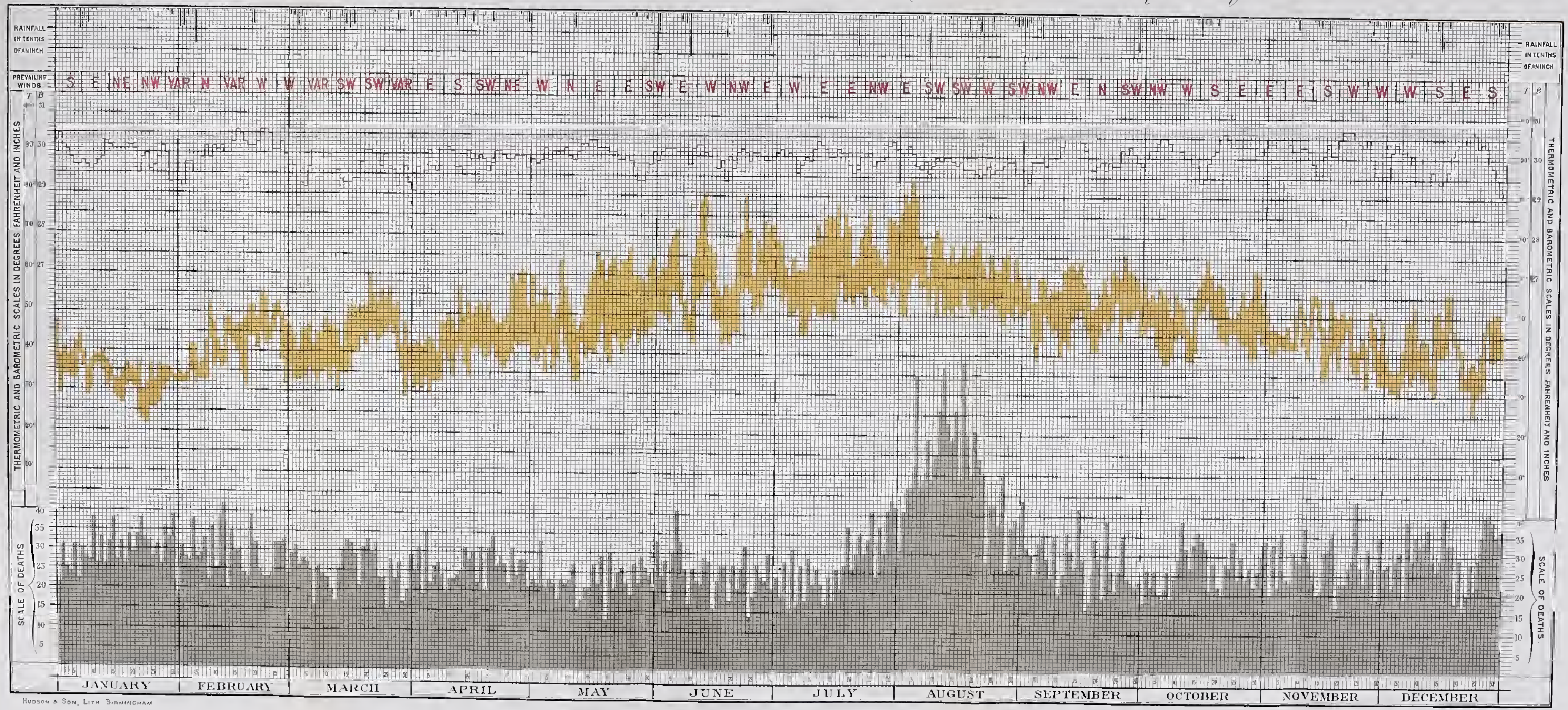
MEDICAL OFFICER OF HEALTH AND ANALYST TO THE CITY.

PRINTED BY ORDER OF THE HEALTH COMMITTEE.

BIRMINGHAM:
GEO. JONES & SON, TOWN HALL PRINTING OFFICES, 87-89, EDMUND STREET

City of Birmingham.

Chart illustrating the relations of the number of deaths to the principal meteorological conditions on each day of the year 1897.



MORTALITY: ═ Deaths ⫿ METEOROLOGY: ▬ Temperature (maximum and minimum) —— BAROMETRIC PRESSURE (corrected and reduced to 32° Fahrenheit and sea level) —— RAINFALL.

Digitized by the Internet Archive
in 2017 with funding from
Wellcome Library

https://archive.org/details/b28928374

With the Medical Officer of Health's

Compliments.

REPORT

ON THE

HEALTH OF THE CITY

OF

BIRMINGHAM,

FOR THE YEAR 1897.

ALSO,

ON THE PROCEEDINGS TAKEN UNDER THE ACTS FOR THE

PREVENTION OF ADULTERATION

OF FOOD AND DRUGS,

BY

ALFRED HILL, M.D., F.R.S.E., F.I.C

Past-President of the Society of Medical Officers of Health;
Past-President of the Society of Public Analysts; Late Examiner in Public
Health to the University of Aberdeen; Fellow of the Sanitary
Institute; Fellow of the College of State Medicine; Fellow
of the Incorporated Society of Medical Officers
of Health;

MEDICAL OFFICER OF HEALTH AND ANALYST TO THE CITY.

PRINTED BY ORDER OF THE HEALTH COMMITTEE.

BIRMINGHAM:
GEO. JONES & SON, TOWN HALL PRINTING OFFICES, 87-89, EDMUND STREET

Health Department,

The Council House, Birmingham,

April 1st, 1898.

TO THE HEALTH COMMITTEE.

Mr. Chairman and Gentlemen,

Introductory Remarks.

I beg to present to you my 25th Annual Report as Medical Officer of Health for the City. It is for the year 1897.

I regret that in several respects the year's statistics are not satisfactory. The very serious outbreak of diarrhœa in the summer will still be fresh in the minds of all who are interested in the welfare of the town, and I have no doubt that the part of my report which deals with that outbreak, and with the recommendations arising out of it, will receive your best consideration.

I also wish to direct your attention to my remarks upon the total death-rate in Birmingham as compared with other towns, and to urge, in view of the increasingly unsatisfactory position that Birmingham holds amongst the great towns, that all projected sanitary improvements should be pressed forward as quickly as possible.

I hope, too, that your Committee will be able to see your way clear to provide suitable public provision for the treatment of cases of diphtheria and typhoid fever. In this respect Birmingham is at the present time far behind many of the large towns.

As regards the sanitary work accomplished during the year, it has undoubtedly been considerable, but much more might be undertaken if the inspectorial staff were increased. I have therefore thought it desirable to call your attention to the question of increasing the number of inspectors and making some re-arrangement of their duties.

POPULATION.

Population.

The population of the city at the middle of the year, as estimated by the Registrar General, was 505,772. I am informed, however, by the Overseers of the Poor, that the number of inhabited houses at the beginning of April was over 102,000, and I am, therefore, disposed to think that the actual population was larger than the estimate. I do not suppose, however, that the discrepancy is sufficient to seriously affect the various rates given in my report.

MARRIAGES.

Marriage-rate.

The number of marriages in the city during the year was 5,515, equal to a marriage-rate of 21·9 per 1,000. The marriage-rates for the five years 1892-1896, were 17·9, 16·9, 17·3, 17·9, and 20·0, respectively. From this it will be seen that the marriage-rate has shown a large increase during the last two years—a result, probably, of the prosperous condition of the town—and this, no doubt, accounts to a considerable extent for the scarcity of houses which is so much complained of just now, in spite of the fact that in some parts of the city the building of new houses is being very extensively carried on.

BIRTHS.

Birth-rate.

The birth-rate for 1897 was 33·2 per 1,000, or 0·8 above the average for the previous quinquennium. I have only recorded one higher birth-rate than this during the past ten years, viz., 33·8 in 1891. The males born exceeded the females by 433, as will be seen by referring to Table I.

Birth-rate in great towns.

According to the Registrar General's Annual Summary, the birth-rate in the thirty-three great towns was 30·7 per 1,000, a much lower figure than ours. Only 7 towns had a higher birth-rate than Birmingham. (See Table VI.)

DEATHS.

Death-rates in Birmingham and great towns.

The death-rate for the year was 21·1 per 1,000, being 1·1 above the quinquennial average for Birmingham, and 2·0 above the figure for the thirty-three great towns. (See Table VI.) It was, therefore, an unsatisfactory death-rate both when compared with previous records for Birmingham, and when compared with the rate for the great towns as a whole. I find, too, that according to the Registrar General's figures only six out o thirty-three towns had higher death-rates than Birmingham its position in the list being, therefore, twenty-seventh against thirtieth in 1896, nineteenth in 1895, twenty-third i 1894, twenty-third in 1893, and twentieth in 1892. Birmingham, therefore, has held a much worse place among the grea towns during the last two years than it formerly did.

Variations in causes of death.

I should like first of all to show what diseases were chiefly responsible for the increase in the death-rate. To do this I have prepared the following table, showing the mortality from a number of prominent causes of death :—

	Deaths in 1897.	Average 1892-96.	Increase or Decrease.
Diarrhœa	923	544	+379
Enteritis	521	209	+312
Measles	414	229	+185
Premature Birth ...	425	362	+ 63
Cancer	376	317	+ 59
Pneumonia	764	724	+ 40
Old Age	482	443	+ 39
Heart Disease... ...	641	619	+ 22
Convulsions	222	212	+ 10
Dipththeria and Croup	160	157	+ 3
Bronchitis	1,061	1,177	- 116
Whooping Cough ...	227	277	- 50
Debility and Wasting	623	658	- 35
Phthisis and other Tubercular Diseases	937	968	- 31

Increased Zymotic mortality.

It is anything but reassuring to find that the high mortality was almost entirely due to three diseases of the zymotic class, viz., diarrhœa, enteritis (which, in young children, is probably for the most part another name for a form of diarrhœa), and measles. The last named disease has remained, so far, outside the control of sanitary measures, but diarrhœa is a complaint which has been most prominently associated with defective sanitation; and the occurrence of a severe outbreak such as took place last summer must of necessity arouse considerable misgivings as to the sanitary condition of Birmingham, and must, in my opinion, be taken to show that a great deal of work has yet to be done before the town can be considered to be in a satisfactory sanitary state. As the diarrhœal outbreak was by far the most important feature in connection with the mortality for the year, I propose to devote a large part of my report to a consideration of its causes, and of the steps to be taken to prevent its recurrence. Before doing that, however, I wish to make some remarks upon the general death-rate, that is, the death-rate from all causes.

Cause of improved Death-rate in earlier years.

It cannot be denied that at one time Birmingham displayed a most commendable activity and a laudable spirit of enterprise in matters for the promotion of public health, and that the efforts made resulted in immense benefits to the community. This is plainly shown by the following figures :—

	Average Death-rate per 1,000.
Five Years, 1873–77...	24·8
„ 1878–82...	21·6
„ 1883–87...	20·7
„ 1888–92...	20·0*
„ 1893–97...	20·2*

*Enlarged City.

Cause of improved Death rate in earlier years—*continued.*

In 1873 I was appointed to the newly-created post of Medical Officer of Health for the City, and taking the ten years immediately following my appointment, it will be seen that the death-rate in the first quinquennium was 24·8; in the second it was only 21·6. I believe that this decrease was a direct result of the active sanitary measures carried out during that period. At the beginning of the ten years there were sixty miles of unsewered streets and roads; at the end there were only sixteen. This meant that at the end of the period an enormous amount of filth, which previously would have remained on the surface or percolated into the soil, was being properly removed by the sewers, thus preventing a vast amount of fouling of the ground. Moreover, at the beginning of the period, only four miles out of 190 miles of streets and roads were properly paved, the surface of the remainder being composed alternately of a mass of wet sludge and dry dust, which it was impossible to remove. But at the end of the ten years the surfaces of practically the whole of the streets and roads had been well made, the wet sludge and dry dust, which being composed of organic substances could not fail to be most harmful, having almost disappeared. During the same decennium no less than 35,000 pan privies were introduced in place of the old-fashioned ashpit privies. Now I have never considered the pan system *per se* a good one, and in my very first annual report I contended that if possible water-closets ought to be used for the removal of excreta. But at that time Birmingham was restrained by Chancery Injunctions and other difficulties from developing the water-carriage system, and there can be no doubt that the pans, when properly placed, were an improvement on the ashpit privies. They ensured frequent removal of excreta, and prevented, or were capable of preventing, much of the fouling of the ground, as well as a large part of the fouling of the air, which was being caused by the midden ashpits. In addition to these great changes the public water supply was taken over by the Corporation and greatly improved, while an enormous number of private wells, which were highly polluted by filth that had escaped at some time or other into the soil from ashpit privies, unpaved courts and streets, and other surfaces, were closed. During the same period, also, a great improvement scheme was carried out, by which a large quantity of old, dilapidated, dark, and badly-ventilated property was removed, and by which, as I proved by actual statistics, the mortality in the streets affected was enormously reduced.

Summary of Sanitary Improvements, 1873-1882.

The improvements carried out in the ten years may by summed up as follows:—Increased sewerage by which filthy liquids could be quickly removed and properly disposed of; increased paving of streets and roads by which unclean offensive surfaces in proximity to dwellings were greatly improved; provision of a purer water supply; conversion of ashpit privies to pan privies, by which prolonged retention of excreta and house refuse was largely obviated; demolition of old and crowded houses, in and around which stagnation of air was very marked.

Result of Sanitary Improvements, 1873-1882.

There were, of course, many minor improvements, but the foregoing summary indicates the chief radical changes of which all minor improvements were but the supplement. What was the result of these changes? A reduction in the average death-rate of no less than 3·2 per 1,000, representing a saving of 1,200 lives per annum.

No decrease in Death-rate in Birmingham in recent years.

Now let us look for a moment at the decennium ending with 1897. In the first half of it the death-rate was 20·0; in the second it was 20·2. There was, therefore, not only no improvement but actually a slight deterioration. Indeed, if allowance be made for the alteration of the city area in 1891, it will be found that there has been practically no improvement in the mortality in Birmingham during the past fifteen years. It is, therefore, high time that some new measures were devised, or some old ones extended or revived, by which such an improvement as took place between 1873 and 1882 may again be brought about.

Reduction in Death-rates of other great towns.

Of course, it may be objected that in 1873 the death-rate was very high, and, therefore, capable of great reduction; but that, now that it has fallen to 20 per 1,000, the lowest possible point has been reached. But the experience of other towns does not confirm this view. Taking the Registrar General's figures for the great towns, I find that during the last quinquennium no less than 25 of the 33 towns had lower death-rates than Birmingham. If other large communities can have death-rates below 20 per 1,000, I do not know why Birmingham should not have the same. Moreover, on comparing the last quinquennium with the preceding decennium, I find that on an average the 33 great towns reduced their death-rates by 2·1 per 1,000; also that Blackburn showed a reduction of 4·0, Huddersfield of 4·0, Halifax of 3·8, Cardiff of 3·8, Oldham of 3·7, Preston of 3·4, and Manchester of 3·3. And while all these great reductions were going on the death-rate in Birmingham remained practically unaltered. In view of these facts it is impossible to maintain that the Birmingham death-rate has reached the lowest point attainable; and equally impossible to deny that in this matter Birmingham has been standing still while other towns have made great advances; thus Birmingham has lost the good position it once held among the large towns. It behoves this city, therefore, to seriously consider what can be done to lower its mortality, and then to energetically carry out the measures that are likely to produce such a result.

Sanitary measures required in Birmingham.

Let me now glance at the individual improvements which were found so beneficial in the earlier years of my tenure of office. Two of them, viz., improved water supply and improved sewerage, I need say but little about. Much has already been done to improve the quality and increase the quantity of the water supply, and great progress has been made in carrying out a project by which, in a few years, Birmingham will possess one of the very best water supplies in the kingdom.

Sanitary Measures required in Birmingham—*continued.*

As regards the sewers, I have frequently stated in my annual reports that complaints are often made of smell from them, and this I have no doubt arises from their imperfect condition; for a sound, well-constructed sewer with numerous openings at the ground level for ventilation will never, in my opinion, cause any great nuisance. But the City Surveyor is at the present time engaged in making a thorough examination of the sewers, and until that is completed nothing definite can be said about them. If, however, they should prove to be faulty it will be imperative that they be thoroughly put in order without delay. The remaining measures by which the healthiness of the town was so greatly enhanced in the decennium 1873-82 were the paving of the streets, the improvement of the privies, and the removal of crowded dwellings; and it is, I am certain, by further attention to these points that the public health may yet be improved. My recommendations on all these points are set out more fully in a later part of my report dealing with the extraordinary outbreak of diarrhœa; but I wish briefly to refer to them here, because I believe them to be the measures by which alone the general mortality, and with it the diarrhœal mortality, can be reduced. As regards paving, little needs to be said about the streets and roads themselves, but the courts and terraces, which for all practical purposes are streets deprived of the advantage of a free circulation of air, are still to a great extent unpaved, and their paving should be pressed forward with all possible speed. If once the courts are paved there will be much less difficulty in compelling the occupants to keep them clean; in fact, in the great majority of cases the paved courts are already kept in fairly good order. As regards the privy accommodation, the number of ashpit-privies has been greatly reduced, but it ought to be clearly understood that no such privies can under any circumstances be tolerated in courts and terraces, or other confined situations. I believe, too, that the time has come when the pan-privies, which were only sanctioned as a matter of expediency at a time when additional water-closets could not be provided, should be converted into water-closets, and that if necessary the corporation should bear a part of the cost. All closets and ashplaces should also be kept much cleaner than they are at present, and in order to facilitate this, the ashes should be removed in the daytime, and the men who remove them should properly cleanse the privy and ashplace by sweeping, and, if necessary, swilling them. And lastly, as regards the demolition of crowded property, I am certain that the full healthiness of many parts of the town can never be adequately secured until more space is obtained around the dwellings, and I recommend that steps be taken to provide an open space, at least 20 feet wide, in front of every house, and that in order to provide this a certain number of houses and other buildings be from time to time acquired and pulled down.

I trust that the magnitude of the work suggested will not be allowed to delay or prevent its inception. Birmingham has been found willing in the past to give freely of its thought, its labour, and its money for the benefit of those whose lives are lived under adverse conditions; and its efforts have been amply recompensed by a great saving of life and a still greater saving of health, with a proportionate increase of prosperity and happiness; and I believe that an equally ample recompense awaits the further carrying out of the work.

Population and Death-rates in Wards.

I now wish to draw attention to the parts of the City in which the mortality is the highest, and, therefore, the parts which call most urgently for sanitary reforms. Taking the various wards, I find that the approximate death-rates in them in 1897 were as follows :—

	Estimated Population.	Approximate Death-rate.
St. Stephen's	23,500	29·8 per 1,000.
St. Bartholomew's	26,000	29·3 "
Deritend	26,300	25·8 "
St. George's	21,500	25·4 "
St. Thomas's	19,400	25·3 "
St. Mary's	16,100	25·0 "
Duddeston	24,200	24·2 "
Nechells	33,600	23·2 "
St. Martin's	25,300	21·0 "
Ladywood	26,900	19·5 "
Saltley	31,900	19·3 "
All Saints'	40,000	19·2 "
Rotton Park	42,700	19·0 "
St. Paul's	17,600	18·1 "
Market Hall	12,500	17·7 "
Bordesley	50,600	16·7 "
Balsall Heath	40,100	16·3 "
Edgbaston and Harborne	29,800	14·1 "

It is not always safe, however, to take the death-rate for a single year as a test of the general healthiness of a comparatively small area, such as a ward. I have, therefore, calculated the average death-rates for the past four years. They are as follows :—

St. Stephen's	26·6 per 1,000.
St. Mary's	26·2 "
St. Bartholomew's	26·1 "
St. George's	23·8 "
Deritend	23·8 "
Duddeston	22·8 "
Nechells	22·1 "
St. Thomas's	20·6 "
St. Martin's	19·4 "
All Saints'	19·3 "
Ladywood	19·2 "
St. Paul's	19·1 "
Market Hall	18·3 "
Rotton Park	17·7 "
Saltley	17·1 "
Bordesley	16·8 "
Balsall Heath	15·8 "
Edgbaston and Harborne	14·6 "

These figures may, I think, be taken as a true indication of the relative healthiness of the people living in the different

Death-rates in wards—*continued.*

wards. There are two points arising from them to which I wish to call attention.

The first point is that the figures completely dispose of the supposition that the death-rate in Birmingham cannot be expected to fall to a lower point than 20 per 1,000. As a matter of fact three of the largest wards already have death-rates below 17 per 1,000, and these three wards contain nearly one-fourth of the entire population of the city. Moreover, two of them, at least, are largely occupied by an industrial population. The fact that these three wards have death-rates of less than 17 per 1,000 most certainly proves that the death-rate for the whole city might be reduced to a much lower figure than 20 per 1,000.

The other point is that the wards in which improved sanitation is most needed, and in which it is most likely that a large reduction in mortality may be effected, are obviously those that have very high death-rates at present. It is, therefore, most desirable that the particular insanitary conditions which characterize these wards should be immediately grappled with. I find that these conditions are chiefly those to which I have just referred, viz., badly ventilated houses; pan privies in close, confined courts; and unpaved yard surfaces.

My study of the death-rates in different parts of the city greatly strengthens me, therefore, in my advocacy of the reforms I have suggested in regard to the above points.

INFECTIOUS DISEASES.

Zymotic Death-rate.

Owing to the enormous number of deaths from diarrhœa, the mortality from the seven principal zymotic diseases was exceptionally high, the zymotic death-rate being no less than 3·8, a higher figure than in any year since 1884. This is a very disquieting feature in the year's statistics, inasmuch as the zymotics are diseases which are largely influenced by sanitary action, and the fact that severe outbreaks of them are possible shows that there is much to be done before our city can be considered at all perfect as regards its sanitation.

Zymotic Death-rates in large towns.

According to the Registrar-General's Summary, there were 5 of the great towns in which the zymotic death-rate was higher than in Birmingham.

SMALLPOX.

Smallpox.

Not a single case of smallpox occurred during the year. This had only happened twice before in the last twenty-five years, viz., in 1889 and 1890.

VACCINATION.

Vaccination.

The returns supplied to me by the Vaccination Officers show that out of 16,757 children whose births were registered in the year ending June 30th, 1897, 2,353 died before vaccination could be performed, and 12,228, or 84·9 per cent. of the survivors, were successfully vaccinated. This percentage, though lower than in 1893 and 1894, when smallpox was prevalent in the town, is yet a little higher than in 1895 or 1896.

Vaccination was much more generally carried out in Birmingham Parish than in other parts of the city, 89·2 per cent. of the surviving children being returned as successfully vaccinated, against 79·9 per cent. in Aston Union, and 82·6 in King's Norton Union. From this it would appear that the Birmingham Guardians take more active measures to enforce Vaccination than those of Aston and King's Norton. The figures for the different districts are given in the table below :—

DISTRICT.	YEAR.	PERCENTAGE OF SURVIVING CHILDREN.			
				Unaccounted for, from	
		Successfully Vaccinated.	Insusc'ptible of Vaccination or had Smallpox.	Removal to places unknown ; and not having been found.	Postponement by Medical Certificate ; Removal to other Vaccination Districts, etc.
Birmingham Parish ...	1893	90·2	0·4	6·8	2·6
	1894	90·1	0·4	6·6	2·9
	1895	88·6	0·7	7·1	3·6
	1996	89·2	0·6	6·8	3·4
	1897	89·2	0·5	6·4	3·9
Aston Union (within the City) ...	1893	81·6	0·5	11·3	6·6
	1894	82·4	0·7	11·0	5·9
	1895	78·9	1·0	11·9	8·2
	1896	79·2	0·8	11·6	8·4
	1897	79·9	0·7	10·1	9·3
King's Norton Union (within the City) ...	1893	81·4	0·9	2·9	14·7
	1894	79·6	0·8	6·2	13·4
	1895	76·6	1·0	5·8	16·6
	1896	82·4	1·4	7·0	9·2
	1897	82·6	0·8	6·3	10·3
Whole City...	1893	86·0	0·5	8·1	5·5
	1894	86 0	0·6	8·2	5·2
	1895	83·5	0·9	8·8	6·8
	1896	84·5	0·8	8·7	6·0
	1897	84·9	0·6	7·8	6·7

Value of Vaccination.

In view of the growing disposition in certain quarters to impugn the value of vaccination, may I call attention to certain points on which I think there is some misapprehension. In the first place vaccinists of the present day

Value of Vaccination—*continued.*

do not claim that vaccination in infancy will prevent outbreaks of smallpox. This was at one time thought to be the case. But experience has proved that the insusceptibility to an attack of smallpox conferred by vaccination gradually passes away, and unless revaccination be enforced there will always be a large majority of the population who, though once insusceptible, are not so now. All in fact, except the children and very young people, will be liable to take the disease. Hence it is quite a misnomer to call a community "well vaocinated," in which vaccination in infancy has not been followed by revaccination at a later period in life. In such a community no surprise need be felt if smallpox should rage violently amongst the older part of the population; it will not do so amongst the younger. Primary vaccination, therefore, however thoroughly it may be carried out, must not be expected to prevent outbreaks of smallpox: revaccination alone will do so.

But while vaccination in infancy alone will not prevent smallpox epidemics, it will prevent the occurrence of cases amongst young children, and further, it will reduce enormously the death-rate amongst the older people who are attacked. During the last epidemic of the disease in Birmingham, the mortality amongst the vaccinated and unvaccinated patients, disregarding a small number whose vaccination was doubtful, was as follows:—

In Vaccinated Children under 10 years old ...	0·0	per cent.
In Unvaccinated " " " ...	35·1	"
In Vaccinated Persons of all ages	4·5	"
In Unvaccinated " "	31·2	"

These statistics were collated under my own supervision, and are not open to question as to their accuracy. I cannot imagine that any unprejudiced observer can dispute their importance as showing that recent vaccination (within 10 years) is an absolute safeguard against death from smallpox, while vaccination at a more distant date renders a patient's chance of recovery about 7 times as great as it would be if vaccination had never been performed. I trust that the public will not allow themselves to be misled by the unreliable statements often made by sanitary tyros, for I am certain that neglect of vaccination involves, to use the language of a recent correspondent in the daily press, a "big" hospital, a "big" staff of doctors and nurses, a "big" financial rate, a "big" death-rate, and a "big" churchyard.

MEASLES.

Measles.

The deaths from measles were very numerous indeed. They amounted to no less than 414, which number is 185 above the quinquennial average. The fluctuations in this disease are very remarkable, and almost inexplicable. In 1893, the year with the lowest mortality, the deaths only numbered 48. Last year they amounted to 414. This is certainly a most astounding sacrifice of young lives, especially from a complaint which, if properly looked after, is by no means very fatal. It is, I think, a serious reflection upon the hygienic education of the community that such a death-roll should be possible. All the deaths were those of children under ten years old, 102 being under one, 295 between one and five, and 17 between five and ten.

Measles—*continued.*

Hand-bill of precautions.

During the year an attempt was made to mitigate the severity of the disease by carrying out a suggestion made in my last annual report. By the courteous co-operation of the School Board, it was arranged that the School Attendance Officers should report to me all the houses in which, in the course of their work, they discovered cases of measles. A circular was then drawn up to be sent to such houses, of which the following is a copy :—

PRECAUTIONS AGAINST MEASLES.

Measles is a *highly infectious* disease, and causes a very *large number of deaths.*

The *first symptoms* of the disease are *coughing, sneezing*, and *running from the eyes and nose.* Anyone having such signs of illness should be *separated* at once from the rest of the household.

A *patient* suffering from Measles should be *kept for a month in a separate bedroom. No children* should on any account be *allowed to enter the sick room*, and the person waiting on the patient should associate as little as possible with healthy children.

It is *illegal* to allow the *patient to go into the street* or into any public place.

No children from the house must be *sent to school* during the illness.

The *patient's bedroom* should be kept *warm* by having a fire burning in it, and *well ventilated* by having the window kept open. All carpets, curtains, and bed-hangings should be removed.

During the illness, and for some time afterwards, great care should be taken to *prevent the patient from catching cold.* Most of the deaths from Measles are caused by not keeping the patient sufficiently warm.

After recovery, the *patient* should be *bathed* with warm water and carbolic soap. All the *clothing and bed linen* used in the sick room should be *boiled and washed.* The *walls* of the bedroom should be *cleansed*, and the *floor* well *scrubbed.* The *window and door* should then be *left open* for as long as possible.

(Signed) ALFRED HILL, M.D.,
Medical Officer of Health.

The Council House,
Birmingham,
June, 1897

From July 16th to the end of the year no less than 1,020 addresses were given to me by the Attendance Officers, and to each of them a copy of the bill was sent. I am hoping that this bill will do something to dispel the ignorance and carelessness that are so commonly shown in treating cases of measles, and I wish to express my thanks to the School Board and its Officers for the kindly help they have given me in the matter.

SCARLET FEVER.

Scarlet Fever.

The year 1897 saw a great decline in the prevalence of scarlet fever, which had been epidemic during 1895 and 1896. The cases notified amounted to 1,929, against 2,964 in 1895 and 3,389 in 1896, and against an average of 2,235 in the five years 1892-1896. The disease, therefore, has now fallen below its average extent of prevalence. The deaths registered during the year numbered 95, or five less than the quinquennial average.

The means taken to prevent the spread of scarlet Fever included the removal of the patient, if possible, to the City Hospital, the disinfection of the house and its contents, and the keeping away from school of children belonging to infected households. During the year 1,641 cases, or about 85 per cent., were admitted to the City Hospital. 1,651 houses were disinfected by fumigation of the infected rooms and stripping and limewashing of their walls. As many as 7,076 articles of clothing and 11,113 articles of bedding, as well as 1,221 of a miscellaneous character, were purified by exposure to superheated steam.

Outbreak at Harborne.

In the early part of July an outbreak of scarlet fever occurred at Harborne, which was both interesting and instructive in several ways. In the weeks ending June 5th, 12th, 19th, and 26th, and July 3rd and 10th, there were 1, 3, 2, 2, 7, and 11 cases respectively. The cause of the outbreak was made clear when one of the medical practitioners of the district called on the Assistant Inspector and told him he had a case of scarlet fever in Tennal Road, and so far as he could learn from the mother, four other children in the house had had the disease in a mild form without her knowing what it was. On the next day Dr. Millard saw the children and confirmed the opinion that they had had scarlet fever. The child who was still ill was taken to the City Hospital, and the other four who were convalescent, were isolated for a short time at home, as they were so nearly well. These four children had been ill for about three weeks, and all the time had been attending school, more or less irregularly, without its being known what was the matter with them. The school they attended was the Old Church School, Harborne, and during the fortnight ending July 10th no less than 7 cases occurred at that school; in fact, out of 8 children of school age attacked during the fortnight at Harborne, only one did not attend this school. The Inspector visited the school in question, and subsequently called and fumigated the building. In the following weeks the disease was not so prevalent, although the cases were decidedly numerous throughout the remainder of the year. This outbreak is interesting as showing how valuable early notification must be, and how serious the results are if a case of scarlet fever escapes the notice of the authorities.

DIPHTHERIA.

Diphtheria.

I am glad to say that a most substantial reduction took place during the year in the cases of diphtheria and membranous croup, which is now classified as a form of diphtheria. The cases numbered 713, against 1,194 in 1896. It will be remembered that this disease began to increase in 1895. In 1892, 1893, and 1894 the cases had amounted to 533, 387, and 406. In 1895 they rose to 741, and in 1896 they further increased to 1,194. In the fourth quarter of 1896, however, the disease received a decided check, and throughout 1897 its prevalence was very much smaller than in the previous year.

The epidemic of diphtheria created a great deal of alarm and naturally attracted much attention. In my last annual report I commented upon it at some length, and discussed a number of suggestions that had been made as to its cause. I was, however, unable to find any specific reason for the outbreak, and could only hazard the conjecture that it might be due to the occurrence of one of those "waves" of the disease which characterise smallpox and scarlet fever. At any rate, so far as I can discover, the rapid increase of the disease occurred without any palpable reason, and the equally rapid decrease is similarly inexplicable. It is, however, very satisfactory to be able to record that in 1897 diphtheria was much less prevalent than in 1896.

The deaths registered during the year numbered 160, and showed a similar reduction to that of the cases. The case mortality was 22 per cent., which seems to be about the normal figure. The case mortality for the last six years has been as shown in the following table :—

		Cases Notified.	Deaths Registered.	Case Mortality.
1892	...	533	102	19 per cent.
1893	...	387	83	21 ,,
1894	...	406	91	22 ,,
1895	...	741	214	29 ,,
1896	...	1,194	293	25 ,,
1897	...	713	160	22 ,,

It is interesting to notice that in the early part of the recent epidemic the case mortality was very much higher than usual. A similarly high fatality at the beginning of an epidemic has been frequently observed in connection with some other infectious diseases.

Bacteriological examination and Antitoxic treatment.

Last June, in order to assist the diagnosis of difficult cases of diphtheria, and also to afford facilities for the antitoxic treatment of the disease, an arrangement was made with Mason University College for the bacteriological examination of any specimen sent there in connection with cases belonging to the city, and for the supply of antitoxic serum if the medical attendant desired it. Circulars and application forms were sent out to all the medical men in the town, and up to the close of the year about seventy availed themselves of the provision thus made. The number of specimens sent to the college up to the end of the year was 137, and in 67 of them the characteristic bacillus of diphtheria was found. A supply of antitoxic serum was sent in 49 cases after an examination had been made, and in 34 cases without an examination being asked for. In every case the examination is made with all possible speed, and the serum, if asked for, is sent directly the result is known, together with a syringe for its injection.

Value of Antitoxin.

It would be interesting if possible, to see what effect the use of the serum has had on the fatality of the disease; but I do not see how this can be done. The information at my disposal is of a very meagre character. The number of cases treated is only small, and I know nothing whatever of the severity of the illness, nor of the surroundings of the patient, nor of the promptness with which the serum was used, nor of the other therapeutic measures resorted to, and without this information it is impossible to say whether the mortality has been reduced or not by the use of the serum. Trustworthy information on this point can only be obtained where the cases are numerous and are all of some severity, where the patients' surroundings are exactly similar, where serum is used at the earliest possible moment, and where the general treatment of the cases does not vary—in other words, in a large hospital. Such information is fortunately available in a joint report made by the Medical Superintendents of the Hospitals controlled by the Metropolitan Asylums Board for the year 1896. I think I cannot do better than quote the concluding paragraphs of that report, which are as follows :—

> "The improved results in the Diphtheria cases treated during the year 1896, which are indicated by the statistics and clinical observations set forth in the preceding report are :—
>
> (i.) A great reduction in the mortality of cases brought under treatment on the first three days of illness
>
> (ii.) The lowering of the combined general mortality to a point below that of any former year.
>
> (iii.) The still more remarkable reduction in the mortality of the laryngeal cases.
>
> (iv.) The uniform improvement in the results of tracheotomy at each separate hospital.

Value of Antitoxin—*continued.*

(v.) The beneficial effect produced on the clinical course of the disease.

"We have had, in fact, somewhat better results to record for 1896 than we had for 1895; and, in view of the extended experience gained during the past year, together with additional facts concerning the post-scarlatinal cases for 1896, we feel that we are fully justified in the favourable opinion we expressed last year on the value of antitoxin in the treatment of diphtheria.

"We would repeat what we stated last year as to the paramount importance of commencing the treatment early—if possible, not later than the second day of the disease. From this time onward the chance of a successful issue will diminish in proportion to the length of time which has elapsed before the treatment is commenced. This, though doubtless true of other methods, is of still greater moment in the case of treatment by antitoxin.

"We have already drawn attention to the trivial nature of the secondary effects that not infrequently arise as a direct result of the injection of antitoxic serum, and we think that neither these effects nor the increased evidence of some of the usual complications are worthy of being considered practical deterrents when the beneficial results of the treatment are remembered.

"We have only to add that we still hold the opinion that in the antitoxic serum we possess a remedy of distinctly—we would now say much—greater value in the treatment of diphtheria than any other with which we are acquainted."

Need of Hospital Provision for Diphtheria.

These are weighty conclusions, and must, I think, be admitted to establish the value of the antitoxic treatment for use in hospitals. As regards its use in private houses, I am not by any means so sanguine. I wish now to repeat what I said in my last annual report, that I consider it most desirable that a public hospital should be established for the treatment of diphtheria cases. In the first place, a large number of cases obviously arise from other cases which are being treated in the same households, and very many of these secondary cases might be prevented by the prompt removal of the first patient to hospital. In the second place, diphtheria is a disease which requires unremitting attention; there are in fact few complaints that more severely tax the ingenuity and therapeutic resources of the medical attendant. It is, therefore, most desirable that medical attention and therapeutic remedies should always be at hand in case of emergency, and this is quite impossible in the homes in which a large number of the cases occur. In many of these homes there is, moreover, no room for the proper isolation and successful treatment of the disease. On all these grounds I am strongly of opinion that public provision should be made for the treatment of diphtheria.

In all the cases of diphtheria that occur in Birmingham a special examination of the house is made, so that any sanitary defects may be found and remedied. If any children from the house attend school, notice of the case is sent to the schoolmaster, with a request that such children shall not be allowed to continue in attendance. With this provision I find that there is only a very occasional and slight spread of the disease through schools. After the termination of a case, the rooms used by the patient are disinfected.

WHOOPING COUGH.

Whooping Cough.

This lightly-regarded complaint is really the most fatal of all the zymotics, except diarrhœa—chiefly because it is so lightly regarded. Last year it was not so prevalent as it often is, but even then it caused 227 deaths, or about as many as diphtheria and typhoid fever did together. Yet how much more dreaded diphtheria or typhoid fever is than whooping cough.

Cause of fatality.

Whooping Cough is almost exclusively a disease of very young children. Only four deaths last year were in children over five years old, 132 were in children between one and five, and 91 in infants under one year old. Most of the deaths are caused by exposure to damp or cold, or by want of attention and help. It is highly probable too, that the want of pure fresh air seriously reduces the chances of recovery, and these points receive a good deal of emphasis from the fact that the deaths are invariably less numerous in better-class districts than elsewhere. For instance, in the neighbourhood of Edgbaston, where there are very few small houses, the death-rate from whooping cough in the decennium 1881–90 was less than one-fourth of the rate for the whole city.

Proposed new action.

I suppose that every substantial improvement in the conditions under which children live may be expected to reduce the mortality from whooping cough, but I am afraid it will be a long time before the reduction thus caused will be very marked. In the meantime I should like to see a plan adopted similar to that which is in force with respect to measles, by which attention would be called more forcibly to the disease, and the necessity for taking precautions with regard to it would be emphasised.

TYPHOID FEVER.

Typhoid Fever.

Both the cases and deaths set down as typhoid fever were in excess of the quinquennial average, the increase being much more marked in the cases than in the deaths; the cases, in fact, numbered 533 or nearly a hundred more than the average, while the deaths were only three more than usual. From this it would appear that the disease was of a mild type. Although the deaths exceeded the average number, they were decidedly fewer than in 1893, 1894, and 1896. In these three years they numbered 94, 105, and 108, while last year they amounted to 89.

Typhoid Fever—*continued.*

As showing the class of persons affected by typhoid fever, I may say that 234 of the patients lived in three-roomed houses, 250 in houses of from four to six rooms, and only 37 in houses of more than six rooms. This shows that the vast majority of Typhoid Fever cases occur amongst the lower and upper working classes, who are the principal occupants of houses of six rooms and less.

Forty-one of the cases were secondary ones, that is, they were directly traceable to a previous case in the same household, and a considerable number of others were apparently due to a previous case in the immediate vicinity. Of the secondary only one occurred in a house of more than six rooms, so that there was a second case at only one in 37 of the houses of more than six rooms; in the smaller houses there was a second case at one in 12. It appears, therefore, that the smaller houses were three times as liable to a secondary case as the larger ones.

Need of Hospital accommodation for Typhoid Fever.

It seems to me that there are very many good reasons for the treatment of typhoid fever cases in a public hospital. The disease spreads principally through the patient's excreta, and the chief means to be taken to prevent its spread are the observance of the most scrupulous cleanliness on the part of those who attend to the patient, and the thorough and immediate disinfection of the patient's excreta and any linen or bedding that has been soiled by them. Unless these points are attended to, there is almost certain to be an extension of the disease. Now it is impossible to ensure these precautions in private houses, and I have reason to believe that they are often totally neglected. If those who are attending to a patient fail to keep their hands perfectly clean—and this is almost impossible in a small and busy household—it is obvious that they must be a source of danger to all their associates, and especially to any for whom they have to prepare food. If they neglect to completely disinfect the excreta then the germs of the disease must find their way into the pan or ashpit privy, or through the water-closet into the public sewer, and there seems great probability that they may then become air-borne, and thus may be the cause of further cases. I do not see how it is possible in many instances to rely upon the patient's friends taking such complete precautions as are necessary; the only safe plan in such instances is to remove the patient to a hospital. The various charitable and poor-law institutions receive a certain number of the typhoid fever cases, but last year five-sixths of the deaths took place in private houses, so that apparently only a small proportion of cases are removed from home. For many of these cases a public hospital is urgently needed.

Protecting Water supplies.

Typhoid Fever epidemics have frequently been caused by the contamination of water supplies, and with a view to safeguarding the sources from which the corporation water is drawn, it was decided last October to obtain information of all cases of the disease occurring in the watersheds of the streams from which the town supply is in part derived. Maps of these watersheds were according prepared, and I wrote to the Medical

Officers of Health of the districts in question asking them to let me know of any cases that might occur within such watersheds. In every case a courteous promise to comply with the request was given. At about the same time it was arranged that in addition to the usual monthly chemical analysis of the water, a bacteriological examination should be made every month of water taken from each of the three zones of supply. The work of making these examinations has been entrusted to Dr. Percy Frankland, of Mason University College.

Typhus Fever.

In April, a case was notified to me as Typhus Fever, a disease practically unknown in Birmingham. The patient was a woman, aged 50, a polisher by trade. She lived in a three-roomed house in St. Vincent Street with a married daughter. The patient and one child slept in the attic, while the daughter and her husband and another child slept in the bedroom below, so that the house was not overcrowded. There did not seem to have been any lack of food, the house was fairly clean, and there were no cases of the disease in the City at the time. It does not seem at all probable that Typhus Fever would arise under such conditions as these. The patient died after three days' illness, and no subsequent cases occurred.

DIARRHŒA.

Diarrhœa

I now come to what is certainly the most striking and perhaps the most important feature in the year's statistics, viz., the terrible mortality from diarrhœa. No less than 923 deaths, or 379 more than the quinquennial average, were attributed to diarrhœa, dysentery, enteric catarrh, intestinal catarrh, and simple or English cholera, all of which I class as diarrhœa, in accordance with the practice of the Registrar General. This is in itself an enormous mortality from such a cause, but unfortunately it does not exhaust the death-roll from diarrhœal diseases, for there were 521 deaths, or 312 in excess of the average, from muco-enteritis and gastro-enteritis, which I have little hesitation in classing as diarrhœal diseases, and which in fact are not distinguished from diarrhœa proper by some Medical Officers of Health. There were thus 1,444 deaths from diarrhœal diseases—nearly one-seventh of the total number of deaths from all causes—and this is so large a mortality that I need offer no apology for dealing with this part of the year's record at considerable length.

Now as epidemic diarrhœa is almost wholly confined to the third quarter of the year, I propose to deal with the mortality in that quarter instead of that of the whole year. I shall first of all call attention to a number of facts which will give a better idea of the nature of the outbreak, and then proceed to consider the general principles underlying these facts and the measures to be taken to prevent future outbreaks of the disease.

Diarrhœa at various ages.

First as to the age distribution of the deaths. This was as follows :—

Under 1 year	930
Between 1 and 2 years	144
" 2 " 5 "	23
" 5 " 10 "	4
" 10 " 15 "	4
" 15 " 25 "	1
" 25 " 45 "	5
" 45 " 65 "	10
At 65 and upwards	29

These figures show clearly that almost the whole of the mortality from diarrhœa occurred amongst infants under two years old. It is obvious that such young children would spend almost all their time either at home or in its immediate vicinity, and therefore that the cause of the great mortality amongst them must be looked for in the conditions under which they lived at home. What then was the character of their homes?

Diarrhœa at large and small houses.

I have tabulated the results obtained by inspecting 500 houses where deaths from diarrhœa occurred in August last. I find they comprised :—

18	houses of less than 3 rooms.
283	" " 3 rooms.
66	" " 4 "
49	" " 5 "
61	" " 6 "
23	" " more than 6 rooms.

These figures show that almost all the deaths occurred in houses of not more than 6 rooms, nearly three-fifths of them being in three-roomed houses. The latter houses are situated to a very large extent in courts and terraces, and almost all of them have ventilation at the front only. Of the 500 houses examined 281 were in courts or terraces, and 290 had no back doors or windows. The diarrhœa deaths were therefore chiefly in very small houses situated in courts and terraces and deficiently ventilated, having no through current of air.

Diarrhœa and insanitary yards and privies.

Now as to the surroundings of these houses. In 158 instances there was a part of the yard or court unpaved and uncultivated, and 300 houses out of the 500 used pan-privies, while 38 others used ashpit-privies. The majority of the houses, therefore, in addition to being small and badly ventilated had near to them accumulations of excreta in pans or middens, and a large proportion had also unpaved and uncultivated ground in proximity to them.

Diarrhœa in Wards.

Before going any further I should like to show how far the various wards of the town shared in the epidemic of diarrhœa,

Diarrhœa in Wards—*continued.*

To do this I have calculated the diarrhœal death-rates for the third quarter of the year, which are as follows :—

St. Bartholomew's	18·6	per 1,000.
St. Stephen's	16·9	,,
Deritend	12·9	,,
St. George's	12·8	,,
St. Thomas's	10·9	,,
St. Mary's	10·4	,,
St. Martin's	9·8	,,
All Saints'	9·4	,,
Duddeston	8·6	,,
Nechells	8·6	,,
St. Paul's	7 5	,,
Balsall Heath	7·1	,,
Saltley	6·9	,,
Rotton Park	6·0	,,
Market Hall	5·4	,,
Edgbaston and Harborne	5·2	,,
Ladywood	5·1	,,
Bordesley	4·8	,,

A consideration of these figures quite shuts out the idea that the enormous death-rate from diarhœa was primarily due to any general external influence, such, for instance, as the temperature of the air. If it had been, the death-rate would surely have been approximately equal in all the wards. On the contrary, the figures point to local conditions as the determining factor in the diarrhœal mortality. The wards at the top of the list are the older and poorer wards, the wards in which small, dark, badly-ventilated houses abound, situated largely in courts and terraces, which are often unpaved and dirty, and in which there are pan privies much too near the houses, as well as some midden privies.

Causes of Diarrhœal outbreaks.

The principal causes of summer diarrhœa may be divided into three classes, viz. :—(1) Climatic, (2) Social, (3) Sanitary.

Climatic causes.

(1) *Climatic Causes.* There can be no doubt whatever that hot weather is the great exciting factor in the production of summer diarrhœa. There is also plenty of evidence to show that it is only when the *ground* has become heated to a certain point that an outbreak of the disease occurs ; in other words, that the heat is not *per se* the cause of the diarrhœa, but rather that it sets in action some malefic agent which exists in or near the ground. This fact must be borne in mind in any endeavour to discover the cause of the outbreak, and in any discussion of the measures to be taken to prevent epidemics of the disease. It is certain that climatic conditions alone are quite insufficient to account for many of the facts connected with diarrhœal outbreaks. It is obvious, for instance, that all parts of Birmingham had practically the same temperature during the recent epidemic; yet, as I have already pointed out certain wards had three of four times as many deaths as certain others. A particular

class of houses also suffered far more than the rest, and this would not have been the case if the outbreak had depended on climatic conditions only. It is clear, therefore, that something besides hot weather is necessary for the production of an epidemic of diarrhœa.

Diarrhœa—*continued.*

Social causes.

(2) *Social Causes.* These also are of great importance. Many infant lives are undoubtedly sacrificed through bad feeding, and this factor is no doubt accentuated in hot weather when food, especially milk, is so very liable to decomposition. The bad feeding may be due to ignorance, or to carelessness, or to poverty, and it is probable that all three evils are more marked in the wards where diarrhœa is most prevalent than in the others. There is, therefore, good reason for thinking that bad feeding, in conjunction with hot weather, is responsible for a large part of the diarrhœal mortality. This theory would certainly account for the fact that diarrhœa only becomes epidemic in the heat of summer, and that it is chiefly fatal amongst a certain class of the population, and in certain parts of the town. But the combined influences of a high temperature and unfavourable social conditions, are of themselves quite insufficient to account for all the peculiar features connected with outbreaks of diarrhœa. They might, perhaps, account for the differences in mortality in different parts of the same town, but they certainly will not account for the differences between one town and another. For instance, London is usually hotter than Birmingham, and it cannot for a moment be supposed that less ignorance or carelessness as to the feeding of infants exists there, yet in the 10 years 1886–1895, the death-rate from diarrhœa in London was 0·70, while in Birmingham it was 1·10, or more than half as high again. In the outbreak under consideration the diarrhœal death-rate in Birmingham, as given in the Registrar-General's Returns, was 6·82. During that outbreak the five highest diarrhœal death-rates in the 33 great towns were as follows :—

Hull	8·31
Wolverhampton...	7·35
Preston	6·86
Birmingham	6·82
Leicester	6·66

The five lowest death-rates were as follows :—

Swansea	0·60
Halifax	1·05
Huddersfield	1·07
Bristol	1·90
Cardiff	2·64

It cannot possibly be supposed that there is sufficient difference in the climatic conditions experienced, or in the social habits which prevail, in the above-mentioned towns, to account for the widely different death rates recorded in them.

Diarrhœa—*continued.*

The figures, like all other inquiries into the subject, go to prove that hot weather and bad feeding by themselves are not sufficient to account for the frequent severe outbursts of summer diarrhœa, and that these two influences will not act in a marked degree, unless certain insanitary conditions be also present. If this be so and I think it is now placed beyond doubt, then it is most important that the fact should be fully appreciated, inasmuch as bad sanitation is the only one of the three factors over which a sanitary authority has any control. A sanitary authority can do nothing to alter climatic conditions, and little or nothing to improve social habits; but all insanitary conditions it can and should remedy.

Sanitary conditions.

(3) *Sanitary Conditions.* In considering the influence of sanitary conditions during the recent outbreak of diarrhœa, it will be necessary to bear in mind the class of property in which the mortality chiefly occurred. I have already stated that almost all the 500 houses examined were either very small or moderate in size, only 23 having more than 6 rooms. I have also shown that the greater number of them were situated in courts and terraces, where for the most part there is far too little air-space and much stagnation of the atmosphere outside the house as well as want of ventilation inside. It appears, therefore, that the sanitary defects which conduce to a high diarrhœal mortality must be those which characterize small houses in courts and terraces. What, then, are these defects? In most of the older parts of the city the courts are practically closed up at one if not both ends, while the houses have very little space in front and none at all at the back. In some courts there are rows of houses built to face each other with less than 10 feet between them in front and none at the back, and with both ends of the court practically closed by high buildings. In contrast to this the Model Bye-laws of the Local Government Board prescribe 25 feet in front and 10 feet at the back of every new house as a minimum amount. In all such courts there is of necessity marked *density of buildings, deficiency of ventilation* both inside and outside the house, and as a result a condition of *fustiness.* Dr. Ballard, whose report to the Local Government Board is the most important and exhaustive document dealing with diarrhœal mortality that has ever been published, insists on these three conditions as greatly conducive to diarrhœa. To quote his own words, "Free atmospheric dilution of polluted air, to be brought about only by free movement of air among and within dwellings, is an effectual means of lessening the energy of a present contagium. Of this I am perfectly certain. There can be no question whatever that to attain this end, and to attain it with the greatest completeness, should be one grand object of a sanitary authority wishing to lessen its diarrhœal mortality." This conclusion of Dr. Ballard's is entirely borne out by my own observations, and my first recommendation, in connection with the recent epidemic, must be that steps be taken to reduce the density of the buildings in the older parts of the

Want of ventilation and air-space.

Diarrhœa and want of ventilation and air-space—*continued.*

town. This can only be done by the demolition of a certain number of houses wherever they are too crowded. As regards houses which have been closed by a Magistrate's order, and which have not been made fit for habitation, power is given to the sanitary authority, under the Housing of the Working Classes Act, 1890, to order the demolition of the houses if their continuance is likely to be detrimental to the healthiness of the surrounding houses. One of the first steps to be taken, therefore, is to order the demolition of all houses which are situated in crowded courts, and upon which a closing order has been made and not rescinded. I think, too, that whenever a closing order is made on houses that are deficiently ventilated, the owner should be persuaded, if possible, to pull them down rather than spend money in trying to make them habitable; for even if they are put in good repair, the want of air-space will continue to render them more or less unhealthy. There are, however, many cases in which houses are crowded together to a very great extent, and yet are not in themselves unfit for human habitation. The Housing of the Working Classes Act deals with such cases by providing that where any building, by its proximity to neighbouring buildings, stops ventilation, such building may be ordered to be pulled down; but compensation must be paid to the owner to the extent of the value of the premises that have been demolished, less the increase in the value of the surrounding premises. I therefore recommend that in all courts in which the houses are too crowded, but not in themselves unfit for use, this plan should be carried out, the houses chosen to be demolished being, of course, the particular houses whose removal would add most to the light and air-space of the remaining buildings. For instance, in a long row of back-to-back houses, every third house might be demolished so that the intervening houses would be exposed to the air on one side as well as in front; additional ventilation by means of a side window as well as extra yard space could then be secured. In other cases the buildings that block the ends of the court would be removed with advantage, so that the air might pass freely into it from the street; in others it would be necessary to improve one row of houses by removing the row facing it, thus providing sufficient light and ventilation.

Of course, the ideal way of dealing with old and crowded property would be to remove it altogether, and build healthy, modern dwellings of various kinds in its place. But this plan would mean a gigantic expenditure of money, for the extent of the property requiring some alteration is enormous. I do not see how it is possible to apply this plan except to a very limited area. · It seems to me that the choice lies between two alternatives. The first plan is to demolish and rebuild all the houses in a small portion of the town, leaving the great majority untouched. The second is to demolish a certain number of houses, chosen on the lines above suggested, and then to improve the remaining houses by all available means. It appears to me that by carrying out the second plan a much

Diarrhœa—*continued.*

larger area might be dealt with, the health of a far larger population would be improved, and, therefore, the return for the money expended would be proportionately greater.

Want of Paving

Dr. Ballard also showed that a loose soil, more or less permeable by air and water, and liable to become fouled by organic matter, was very conducive to diarrhœal mortality, and he therefore advised the sealing of the ground immediately surrounding dwellings with some impervious material. Now I find that 158 houses, out of the 500 houses examined, had ground near to them which was neither paved nor cultivated. In most cases this ground was uneven, and allowed rain water and other liquids to lodge. But worse than this, the tenants in many cases appear to think the unpaved part of the yard a suitable place for depositing house refuse. In some of the yards I could see bedroom slops, tea-leaves, green vegetable refuse, bread, fish heads, &c. In these cases the soil could not fail to be very foul, and there is ample evidence that emanations from such soil will cause diarrhœa. The evil is, moreover, often aggravated by the keeping of fowls, ducks, or pigeons, which ought never to be kept in proximity to dwellings. Even if the present and future fouling of unpaved yard spaces could be prevented, there is every reason for thinking that the ground is already so foul that nothing but paving with impervious material can prevent injury to health. I therefore recommend that all yard surfaces should be well paved, preferably with blue bricks in cement.

Accumulations of excreta and refuse.

Dr. Ballard further found that accumulations of refuse in privies, ashpits, and dust bins promote diarrhœal mortality. Now, out of the 500 houses examined 300 had pan-privies and 38 had ashpit privies. As regards the ashpit privies they are scarcely ever free from smell, they often contain liquid filth, the contents remain for a long time a decomposing mass of refuse and excrementitious matter, and when the ashpit and privy are emptied it is a notorious fact that the nuisance extends for a considerable distance around. Such privies are being gradually abolished, though not so rapidly as I could wish, it being necessary to show plainly that they are in such a state as to be a nuisance before legal action can be taken. As regards the pan-privies there are over 30,000 of them in the town, most of which are at times a great nuisance, and ought to be replaced by some form of water-closet. It is possible to conceive that in a country place a pan or ashpit-privy might be free from serious nuisance, but in any crowded district this is quite impossible, and no such privy ought to be tolerated in any populous neighbourhood where the water-carriage system is available. The old pan privies in Birmingham were put in some twenty or twenty-five years ago, when very little attention was paid to their construction or their position. Let me give a few examples taken from my observations of places where there have been deaths from diarrhœa. In one instance the wash-house, tub-shed, and pan-privy were all situated underneath a loft, so that no air could pass out of them by way of the

Diarrhœa and accumulations of excreta and refuse—*continued*

roof. The privy was approached by a passage 2½ feet wide and 8 feet long, situated between the wash-house and tub-shed, the door of the privy being near the end of this passage, which, of course, was very dark and close. The outside air would only find access to the privy through this passage and through a small hole in the privy wall, while there was another hole between the privy and tub-shed, through which the dust from the ashes must find its way into the privy. The privy was so dark that it was impossible to see in broad daylight whether the floor was dirty or not. In another instance there were two privies, a tub-shed, and a wash-house under the same roof. The two privy doors opened into the tub-shed, so that one had to pass through the tub-shed to reach the privies, and the tub was so near one privy door that there was hardly room to pass. Even worse, perhaps, than this, one of the pans was separated from the wash-house boiler by a wall which was only 4½ inches thick, and in a defective condition. The air of the privies and tub-shed was quite warm, and the odour from the heated contents of the pan was most sickening. Abutting on this property were the backs of a number of houses, at each of which there was a pan-privy built right against the back wall of the house, so that the privy door when open almost touched the house door. In numerous other instances I found a block of pan-privies situated within a few feet of the houses in a close and badly ventilated court where there could never be a current of air to carry off the emanations from the pans, and where it was impossible to find a better place for the privies. There must always be some smell from a pan-privy, however well situated and well looked after it may be ; and in such positions as I have described, pan-privies cannot fail to be a serious nuisance and detriment to health. In all such cases the only remedy is the conversion of the privies into closets on the water-carriage system. But these very privies were put in some twenty years ago at the suggestion, if not by the order, of the Corporation, and they were some improvement on the privy-midden system. In practice, too, it is found very difficult to get the owners of pan-privies to convert them to water-closets. Under these circumstances I think it might perhaps be well for the Corporation to follow the example of a number of large municipalities who are making either a fixed or variable contribution towards the cost of conversion of such privies as are objectionable, not from any neglect on the part of the owner or tenant, but from the inherent defects of the system.

Some considerable time, however, must elapse before all the pan-privies can be converted into water-closets, and, in the meantime, it is absolutely imperative that more attention be paid to keeping them as clean and free from smell as possible. At present, beyond emptying the pan and removing the ashes from the tub or shed, nothing is done by swilling or even sweeping to cleanse out the privy and ash-place. In almost all the cases I have visited there was evidence of urine on the privy floor and around the pan itself. Moreover, the square space in which the pan stands appeared never to be swept out, as it usually contained an old accumulation of filth round its edges, comprising paper that had blown out of the pan after being used, and other refuse matter, covered over with matted cobwebs. In the tub-sheds also, as a rule, there was no evidence of sweeping, and in most cases it appeared as if ashes and rubbish had been left lying about the floor instead of being properly swept up and removed. In some instances I found brick ends, bottles, tins, paper, &c., in the tub-shed, which, to all appearance, had been lying there for a long time. I am bound to say that at present the scavenging of the privies is very inadequately carried out, and I think this is partly due to its being done at night. I would suggest that the pans only should be removed in the night, the ashes being fetched by a different set of men in the day time; and that the ash collectors should be made responsible for sweeping out and swilling the privy, both in front and at the back of the riser, as well as the tub-shed, every time they visit. I feel compelled to say that in some of the places I visited, all reasonable care seemed to have been taken by the landlord and tenant, and yet there was real ground for complaint on account of the bad scavenging, and I recommend that the neccessary arrangements be made for the proper cleansing by the night-soil men of the privies and tub-sheds.

To sum up briefly the points in the foregoing statement:—

Summary of causes of Diarrhœa.

Diarrhœal mortality depends on (1) Climatic, (2) Social, and (3) Sanitary Conditions, but the Climatic and Social causes do not operate materially, unless faulty Sanitary conditions are also present. It is, therefore, of the highest importance to remove such insanitary conditions as are proved to conduce to diarrhœal mortality.

Inspection of the houses where diarrhœal deaths have occurred shows that the most important of these conditions were—

(1) Deficient ventilation and air-space, both within and around dwelling-houses, leading to "fustiness."

(2) Unpaved and uncultivated ground near dwelling-houses, upon which organic filth of many kinds accumulates, and on which fowls and ducks are often kept.

(3) Emanations from pan and ash-pit privies, situated in close, confined positions, and too near dwellings.

(4) Accumulations of refuse, soakage of urine, etc., in and around the privies and tub-sheds.

Summary of improvements suggested.

To remedy these conditions I make the following recommendations :—

(1) That all houses which are condemned as unfit for habitation, and which are situated in crowded courts, be at the earliest possible period pulled down.

(2) That all houses which are not unhealthy in themselves, but which are obstructive to other buildings, be acquired by the corporation and demolished.

(3) That all uncultivated ground in proximity to dwelling-houses be well paved with blue bricks in cement, or some similar impervious pavement, and that the keeping of fowls or ducks on such ground be prohibited.

(4) That all pan-privies and ash-pit middens be converted into water closets, the corporation paying part of the cost if necessary.

(5) That while the latter work is being carried out all ashes be collected in the day time, so that the privy and ash-place can be well swept and swilled at the time the ashes are removed.

Of course it must be obvious that if these improvements are to be carried out, a very large expenditure of money from public or private sources must be entailed. I most earnestly trust, however, that this will be no deterrent to the accomplishment of sanitary reforms which are so urgently needed.

METEOROLOGY AND MORTALITY.

Temperature and Diarrhœa.

The chief interest in the meteorology of the year lies in the intimate connection which is known to exist between climatic conditions and diarrhœal mortality. I have already alluded to the theory that the essential cause of diarrhœa is a micro-organism which has its home in the earth's superficial layer, but which remains inactive until the temperature of the ground, not of the air, has become high enough to favour its development. This view is certainly confirmed by the following figures :—

Weeks ending		Highest temperature of the air.		Highest temperature 4 feet below the surface of the ground.		Deaths from Diarrhœa and Enteritis.
June 5	...	70·0	...	48·5	...	14
,, 12	...	79·1	...	49·3	...	14
,, 19	...	81·0	...	50·2	...	4
,, 26	...	80·2	...	50·7	...	8
July 3	...	73·7	...	51·9	...	8
,, 10	...	68·0	...	52·2	...	6
,, 17	...	78·3	...	52·8	...	16
,, 24	...	76·6	...	53·2	...	42
,, 31	...	75·2	...	53·6	...	81
Aug. 7	...	84·4	...	54·5	...	160
,, 14	...	72·1	...	55·0	...	228
,, 21	...	68·8	...	54·9	...	224
,, 28	...	66·0	...	54·6	...	157
Sept. 4	...	65·2	...	54·4	...	89
,, 11	...	62·5	...	54·0	...	44
,, 18	...	63·8	...	53·3	...	44
,, 25	...	61·7	...	53·1	...	33
Oct. 2	...	65·8	...	52·9	...	26

A study of these figures will show that the relation between the air temperature and the mortality from diarrhœa is by no means constant, that is to say that the deaths from diarrhœa do not rise and fall with the fluctuations in the temperature of the air. For instance the air temperature in June was much higher than in July, yet the diarrhœal mortality was much lower. Even in August, also, the air temperature was but little higher at any one period than in June, while on the whole it was lower; yet in August the deaths from diarrhœa were something like twenty times as numerous as in June. On the other hand it will be noticed that the ground temperature was rising steadily during June and July, that it reached its maximum in the week of greatest diarrhœal mortality, and that as soon as the ground temperature began to fall the diarrhœal mortality began to decrease also. The experience of the past year entirely strengthens the view that it is the temperature of the earth, not of the air, that determines the prevalence of diarrhœa, and, therefore, that the germ of the disease must reside in the earth's crust.

SANITARY STAFF.

Sanitary staff.

During the great outbreak of diarrhœa, when the death-rates were so exceptionally high, there were some complaints that the house property in the town was not inspected often enough, and that some of it was thus allowed to get into a very dirty and defective condition.

House inspection forms a portion of the work of the district inspectors, 19 in number, each of whom is responsible for a certain part of the town. These inspectors have also to attend to all complaints, and superintend the abatement of all nuisances; to inquire into notified cases of infectious disease; to inspect workshops, with the assistance of one other officer; and to visit lodging houses with the assistance of another additional inspector. Their duties are, therefore, very multifarious and onerous, and do not, I think, leave as much time for systematic inspections of their districts as could be desired. If they are to inspect every house in the town once a year only, each of them must examine about 18 houses per day in addition to his other work.

During the past ten years the work of these inspectors has been greatly increased. In 1890 the Infectious Diseases (Notification) Act was adopted, under which no less than 3,779 cases of infectious disease were dealt with last year. In 1891 the Housing of the Working Classes Act came into operation, and last year a complete schedule was drawn up of all the defects discovered at each of the 130 houses which I represented under this Act, a work entailing a considerable expenditure of time. Then in 1892 the duty of inspecting workshops was handed over to them, and last year 9,537 visits were paid to such buildings.

To help in carrying out all this extra work only one additional inspector has been engaged, and I think it would be well for your Committee to consider whether the present staff is large enough for the work required of it, and whether some rearrangement of the duties of district inspectors is not desirable. In Liverpool, after making allowance for the difference in population, there are 38 inspectors engaged in the same work as is done here by 19, some of them giving all their time to general sanitary work, others to disinfection, others to inspection of lodging houses, others to inspection of workshops, and others to the institution of prosecutions. In addition, there is a large clerical staff, so that the general inspectors are no doubt relieved of much record keeping.

DWELLING HOUSES.

Houses unfit for habitation.

During the year I represented 130 houses to you as being unfit for occupation. As a rule they were small, badly ventilated, dark, damp and dilapidated; and almost all of them were situated in courts and terraces, and in the older parts of the town. The yards, privies, ash places, and washhouses attached to them were for the most part in bad condition, and rendered the houses much less healthy than they would otherwise have been.

As a result of the notices served with regard to these houses, 19 have been put in fairly good order; it is impossible to make such houses thoroughly satisfactory owing to their position and construction. No further action was taken with regard to these houses. Of the remaining houses 50 have been closed either voluntarily by the owners or by order of the magistrates, and 45 others have been demolished, leaving 16, out of the 130 represented, not yet finally disposed of.

I am very pleased to report so large a proportion of demolitions, because as I have said it is for the most part impossible to make the houses I represent really suitable for habitation, and I should be glad if all of them could be pulled down instead of patched up.

Necessity for providing Small Houses

I would point out, however, that the work of removing small low-rented houses, whether for sanitary or business purposes, cannot go on indefinitely without causing great inconvenience to the class of people who live in them, unless suitable accommodation be provided in the same neighbourhood for those who have been turned out. This fact has been recognised of course on all hands, and provision has been made

Necessity for providing small houses—*continued.*

in several Acts of Parliament to prevent any difficulty arising from this cause. Already complaints are being made that people who cannot pay a rent of more than 3s. or 3s. 6d. a week are obliged to live in houses that are scarcely fit for habitation, because there are hardly any houses to be found at such a rental; and so far as I can judge such complaints are justified. It is, I think, most desirable that a large number of dwellings should be erected which would be within reach of the poorer classes; indeed, it is more than desirable, it is absolutely necessary, if the work of removing old, dilapidated, and insanitary property is to be actively carried on. I entertain the hope, therefore, that arrangements will soon be made for the erection of dwellings for the lower classes at a rental within their means.

Unhealthy houses.

In addition to those mentioned above, I also examined over 150 defective houses, to which my attention was called by the Inspector of Nuisances. I did not consider these houses bad enough to be represented under the Housing of the Working Classes Act. In some instances the owners promised to either repair or demolish them, and in others I recommended that notices be served under the Public Health Act to put the houses into a proper state of repair.

Want of suitable Pantries.

One of the serious defects in many of the small houses I have inspected, is the want of a suitable place for keeping food. In a vast number of houses the pantry is a dark unventilated recess, in some far corner of the living room, away from the light and inaccessible to the outside air. Opening as it does directly into the living room, and having little if any ventilation, it is impossible for the air in it to be at all pure, and food kept in it must easily become sour or tainted or otherwise decomposed. This may, I think, have a marked effect upon the diarrhœal mortality. In many houses the pantry is rendered still more unsuitable by having a sink in it without any trap on the bend-pipe, and in some cases without any attempt being made to disconnect the sink drain in one house from that in the next. so that the effluvia from liquids put down the sink in one house can find their way into several others.

Houses cleansed and repaired.

During the year 1,103 filthy houses were cleansed at the instance of the Health Department, and 1,312 houses were put in repair. Thirty-nine houses were provided with better means of ventilation by windows being made to open, and 40 cases of overcrowding were remedied. Water was removed from no less than 229 cellars, and the spouting of 344 houses was repaired, principally in order to prevent the walls of the house becoming damp.

CLOSET ACCOMMODATION.

Conversion or improvement of Ashpit Privies.

Considerable progress was made during the year with the abolition of ashpit privies, 768 of them being converted into water-closets. This is a fairly large proportion of the ashpit privies now existing, which number less than 8,000. I attended at the Police Court on several occasions and gave evidence in support of legal proceedings taken with respect to ashpit-privies which, in my opinion, were a nuisance, and probably injurious to health, and on each occasion a conviction was obtained. In 972 cases in which conversion could not be legally enforced the ashpits and privies were repaired and improved, so as to mitigate the nuisance from them. A little work was also done towards diminishing the number of pan privies, 105 of them being replaced by water-closets. As, however, there are over 30,000 pan privies in the city, the conversion of this small number would not materially improve the health of the city as a whole, though, no doubt it would benefit the persons immediately affected by it; hence I believe it necessary that some general plan should be adopted by which a large number should be converted every year, beginning with those that are defectively constructed and badly placed. Pan privies constructed in blocks and situated in courts, seem to me to be specially obnoxious. There are many reasons for wishing that every house should have a closet to itself, and if this is not possible there should be one closet—and that a water-closet—to every two houses. The best plan seems to be to build such a closet at the point where the two houses join each other, and if there is an overhead flushing tank it should be placed inside one of the houses. When the closet is so placed the people who use it are saved a long journey across the yard, and a great deal more privacy is also obtained, the claims both of health and decency being thus consulted. At the same time the misuse of the closet, which is a constant source of annoyance to the landlord, would, I think, be largely avoided, as only the occupants of two houses would have access to the closet, and the responsibility for any abuse could be more readily brought home to the proper person.

Conversion of Pan Privies.

COURTS AND YARDS.

Paving of courts.

I am glad to record that during the last quarter of the year the paving of back yards was pushed forward with much greater energy than before, your Committee having decided to serve notices on the owners of all such yards as were not in good condition. During the year 484 yards were paved or repaired, 195 being taken in hand in the fourth quarter alone. The condition of the yard surfaces was at the same time improved by the removal of fowls, ducks, or pigeons wherever they were found in unsuitable positions or in a dirty state. I trust that the increased activity in these directions will be

Keeping of Animals.

maintained until all yard surfaces are paved with impervious material—I regard as of comparatively little value any other kind of pavement—and no animals are kept in unsuitable places.

DRAINAGE.

Yard Drains.

The number of drains cleansed and freed from obstruction was 3,462. This seems a large figure, and shows how necessary it is that constant attention be given to the condition of drains. The traps on 1,805 drain openings were either re-set or replaced by a better kind; in some instances an old-fashioned "bell" trap was at fault, but in the majority of cases it was a "D" trap that was defective. Both these traps are very liable to get out of order, the "bell" trap being often found without its bell, while the "D" trap, which is easily obstructed, is frequently pulled up or broken by ignorant and careless tenants. The more modern "gully" trap is free from both these objections, and it would be advantageous to put this form of trap in generally, both from a pecuniary and a sanitary standpoint.

Sink Drains.

In 206 cases the sink-drain was found to be directly connected with the sewer, and was disconnected; in a good many instances it had been, at some time or other, purposely stopped up, and had been opened again without being disconnected as it should have been. In addition to the sink-drains disconnected, 367 others were provided with a proper glazed waste-pipe, so that soakage of the liquids into the brickwork of the sink and wall might be prevented.

Drains in Cellars.

In 44 instances drain openings in cellars were either disconnected from the sewer or abolished altogether. Such openings may be regarded practically as the laying on of a supply of sewer air to the interior of the houses, for as a rule the traps on them are dry, and a strong current of air passes from the drain into the cellar. Some of the cellar drains abolished were in large expensive houses, showing how unwise it would be even now to exclude such houses from inspection.

Defective Drainage at Saltley.

In the early part of the year a most glaring case of bad sanitary arrangements came to notice at a large house of 17 rooms at Saltley. In this case the drainage of the premises passed into a dumbwell instead of into the sewer, several drain openings were untrapped and others not efficiently sealed. The soil pipe was badly ventilated, and ran through the china pantry instead of down the outside of the house as it ought to have done. One soft-water cistern was directly connected with the soil pipe, and another with the sewer. In the yard there was an ashpit privy, and the drinking water was obtained from a well which was found to be badly polluted. The house, in fact, was in almost as bad a sanitary condition as it is possible to imagine.

Drains not connected with Sewer.

In February I received a complaint that the drainage from all the houses in Couchman Road, Saltley, was allowed to run into a disused clay-pit, which was very foul and offensive. A fatal case of diphtheria and a case of blood poisoning had occurred in two of the houses. I visited the place, and found the complaint was quite justified. There were fifteen houses in this block, of which eight had been occupied since February, 1896, and seven since July, 1896. At the time of building there was no sewer in the road ; temporary pan-privies were provided, and the drains were connected with the clay-pit, which of course in time became a very decided nuisance. The road had been sewered some time before my visit, but the house drains had not been connected with the sewer. The contents of the pit were disinfected, and the drainage of the houses was properly connected with the sewer. I consider this a glaring example of the danger of allowing houses to be occupied until the drain connections have all been properly made.

LODGING HOUSES.

Common Lodging Houses.

At the end of the year there were 79 registered common lodging houses in the city, with accommodation for 2,265 lodgers. The number of common lodging houses is much less than it was two years ago, though the number of lodgers is as large as ever. This is because a number of smaller lodging houses have been either pulled down or closed, while several of the bigger houses have been enlarged ; as a rule, too, the new houses that have been registered have accommodation for a larger number of inmates than was formerly the case, it being quite a rare thing to register a house for less than thirty lodgers. I regard these changes with much satisfaction, because the large houses are almost always better equipped and better conducted than the smaller ones. It is also much easier to see that the bye-laws are carried out in a small number of large houses than in a large number of small houses situated at a distance from each other. For this reason I should be glad to see all the smaller lodging houses disappear. It also seems desirable that more lodging houses should be provided for women only; at present there are only two or three set apart for their use, and houses that receive both men and women are much more difficult to manage than those that receive persons of one sex only.

Houses let in Lodgings and Common Lodging Houses.

In addition to the common lodging houses there are about 80 houses registered as "let in lodgings." Both the common lodging houses and the houses let in lodgings are visited at short intervals by the district inspectors and by the lodging house inspector. The common lodging houses are also visited about once a fortnight during the night. Last year the total number of visits to the two kinds of lodging houses was 14.410, of which 13,068 were made by day and 1,342 by night. Very few serious breaches of the regulations were discovered. In many cases the inspector got the regulations enforced by cautioning the keeper, and then visiting the house frequently for a time to insist on the necessary measures being carried out.

In three cases prosecutions were necessary, and were successfully undertaken, one for allowing the floors to be in a filthy state, one for letting two men sleep in the same bed, and one for allowing lodgers to sleep in the kitchen.

CANAL BOATS.

Canal Boats.

The number of boats on the register at the end of 1897 was 364, 31 having been registered during the year, and 13 cancelled. The number of inspections made was 756, and the infringements of the regulations remedied were 80. Of these, 36 had reference to registration and marking, 8 to the separation of the sexes, 11 to overcrowding, and 12 to the provision of drinking water.

WORKSHOPS.

Workshops.

The importance of maintaining workplaces in a healthy sanitary condition seems to be even greater than it is usually thought to be. When it is remembered that the artisan classes usually spend about one-third of their time in workshops and factories, while many pass quite as much of their time in the workshop as at home, it will be seen how desirable it is that their workplaces, as well as their homes, should be made as healthy as possible. I am glad to say that in recent years—the last five years more especially—there has been a marked improvement in the condition of the factories and workshops. Better ventilation has been arranged for, overcrowding has been removed, cleanliness has been insisted on, and improved sanitary conveniences have been provided. Even now, however, there is much to be done before the workplaces in the town will be satisfactory. Many of them are built in most unsuitable positions, some in crowded courts where they are not only deficiently ventilated themselves, but also interfere with the ventilation of the dwelling houses ; some are actually built over washhouses, and others over closets. Last year 9,537 visits were paid to workshops. Amongst the improvements ordered and carried out, I may mention the limewashing of 596 shops ; the provision of 105 additional water closets ; the removal of 28 midden ashpits and 24 pan privies, water-closets being put in their place ; and the improvement of the ventilation in 40 instances. It is obvious that such work as this must greatly benefit the workpeople on whose behalf it is carried out.

DAIRIES, COWSHEDS, AND MILKSHOPS.

Dairies, Cowsheds, and Milkshops.

At the end of the year there were 23 dairies, 70 cowsheds, 2,139 milkshops, and 85 purveyors of milk on the register kept by your Committee under the Dairies, Cowsheds, and Milkshops Order of 1886. By this Order it is made illegal for anyone to carry on business as a dairyman, cowkeeper, or milkseller unless he is properly registered ; it is thus possible to maintain a complete supervision of all places in the city where milk is stored or sold.

Dairies, Cowsheds, and Milkshops.

The number of dairies remained unchanged throughout the year; the cowsheds numbered one less at the end of the year than at the beginning; while the milkshops showed an increase of 46, and the purveyors an increase of three. Considerable care is exercised in placing new names on the register, 37 applications for permission to open milkshops having been refused during the year. One hundred and twenty-five visits were paid to dairies, 1,782 to cowsheds, and 5,289 to milkshops. On the whole there was not much to find fault with. One hundred and sixteen shops, 45 cellars, and 13 pantries in which milk was kept were ordered to be limewashed, and five dirty pans or other vessels were ordered to be cleansed. The sale of lamp oil, tripe, fish, and vinegar or pickles was stopped wherever it was discovered. In fifteen instances the sale of milk had to be discontinued for a time, or temporarily carried on at another place, owing to the occurrence of infectious disease.

BAKEHOUSES.

Bakehouses.

There are about 500 bakehouses in the city, and 1,037 visits were paid to them. One underground bakehouse was pulled down during the year, leaving about 21 still in existence. Limewashing was ordered in 79 instances, and in one instance the inspector found five ducks in a recess over the oven, and immediately served a notice for their removal, which was complied with.

SLAUGHTER HOUSES.

Slaughter Houses.

The inspection of slaughter houses is carried out by officers acting under the direction of Mr. F. H. Edwards, Superintendent of Markets, who informs me that 10,447 visits were paid to them last year. No summonses were necessary for breaches of the bye-laws, and only seven slaughter houses were ordered to be lime-washed.

Towards the end of the year I was asked by the Markets and Fairs Committee to visit a building in Granville Street. I found it to be small, and both difficult and dangerous of access. Its sanitary surroundings also were bad, and I reported that it was quite unfit in every way for a slaughter house.

UNWHOLESOME FOOD.

Unwholesome Food.

The work of inspecting food, with a view to the discovery of any that is diseased, unsound, or unwholesome, falls principally upon the officers of the Markets Department. For many years past it has been the custom of the majority of dealers in meat, fish, poultry, and fruit to call the attention of the inspectors to any article that does not seem fit for sale. Last year 1,221 lots of bad meat, and 466 lots of bad fish, etc., were handed over to the officers, while 15 lots of meat and 5 lots of fish were seized by them on their own initiative. The food seized by the inspectors was submitted to me in 13 instances, and in each case I certified that it was unfit for use. The total weight of bad meat destroyed was 208 tons; of fish, etc., 82 tons; and of fruit over 12 tons. Six persons were summoned during the year for offering bad meat for sale, and fines amounting to £50 were inflicted on them. In 6 instances I attended at the Police Court, and gave evidence in support of the prosecutions.

WATER SUPPLY.

Water Supply.

In accordance with my usual practice I made monthly analyses throughout the year of the Corporation Water Supply. The results are given in Table XIV. The general quality of the water was about the same as usual.

I also analysed 160 samples of water taken from the streams and deep wells from which the Corporation water is obtained, and reported the results to the Water Committee.

Bacteriological Examination.

During the year a circular was received from the Local Government Board, calling attention to the importance of guarding water supplies against any possible contamination. Your Committee then decided to have monthly bacteriological examinations made, and arranged with Dr. Percy Frankland, of Mason University College, to undertake to examine three samples every month, one from each of the zones of supply. The results of these examinations are at once reported to the Water Committee. At the same time I wrote to a number of Medical Officers of Health, asking them to report to me any cases of Typhoid Fever occurring in the watersheds of the streams from which the Birmingham water is in part derived, so that the possibility of the water becoming infected might be as far as possible prevented.

Precautions as to Typhoid Fever infection.

Wells.

There are still a considerable number of shallow wells in the town, and many of them are so placed that it is hardly possible to conceive that they are unpolluted. They are specially numerous at Balsall Heath. Whenever a complaint is made by persons using the well, or if a case of infectious disease occurs at a house where there is a well, it is my custom to analyse a sample of the water and report the results to your Committee. Last year I analysed 27 well waters, and during the year 18 wells were closed.

SMOKE NUISANCES.

Smoke.

Systematic observations of factory chimneys were made throughout the year with a view to detecting breaches of the regulations as to the emisson of dense black smoke, the total number of observations being 5,979. If dense smoke was emitted for more than ten minutes in one hour, the offender was reported for having broken the rules. One hundred and ninety-one manufacturers were thus reported last year, of whom 131 were cautioned and 59 summoned. Fifty-eight convictions were obtained, the fines inflicted amounting to £38, and the costs to £33.

OFFENSIVE TRADES.

Offensive Trades.

During July I received a complaint of a nuisance arising from works in Great Charles Street. I visited the place, and found that the smell arose from mineral naphtha, used for dissolving india-rubber, in the course of manufacture of bicycle tyres. The business carried on was a small one, and the quantity of the material used was therefore small. But unfortunately the smell from it is very strong, though I did not think that the condition of things I found was a cause of injury to health. The shop in which the work was carried on was a large one, and at my suggestion the owner agreed to put in a ventilator in the roof, so that the offensive fumes might be carried upwards, and more readily dissipated.

Earlier in the year I received a complaint concerning a fried fish shop in Ledsam Street, but on visiting I was unable to see that there was any sufficient nuisance to call for official interference.

ANALYTICAL WORK.

Miscellaneous Analyses.

Including those already alluded to under the heading Water Supply, I received during the year 456 samples of water, sewage, and other articles not obtained under the Food and Drugs or Margarine Acts. This number is decidedly larger than in previous years, for 281 were examined in 1895 and 357 in 1896. The following Table gives particulars of the various Committees for whom the articles were analysed :—

	Number of Samples.	
Water Committee—		
Water, Effluent		171
Public Works Committee and Drainage Board—		
Water, Effluent, Sewage	184	
Mortar, Sewage Fungus, Mud	5	
		189
Health Committee—		
Water	39	
Cloth, Poudrette, Cocoa, etc. ...	51	
		90
Other Committees and Officials—		
Water, Paint		6
Total Samples... ...		456

I remain,

Mr. Chairman and Gentlemen,

Your obedient Servant,

ALFRED HILL, M.D.,

Medical Officer of Health.

[illegible]

APPENDIX.

TABLE I.

MARRIAGES, BIRTHS, AND DEATHS IN THE TWELVE YEARS 1886–1897.

YEAR.	MARRIAGES.	BIRTHS.			DEATHS.					
		Males.	Females.	Total.	Males.	Females.	Total.	Of Infants under One Year old.	From Seven chief Zymotic Diseases.	In Public Institutions.
1886 ...	—	—	—	15,622	—	—	9,182	2,712	1,462†	1,239
1887 ...	—	—	—	15,315	—	—	9,225	2,670	1,424†	1,259
1888 ...	—	—	—	15,076	—	—	8,465	2,293	924†	1,195
1889 ..	—	—	—	15,357	—	—	9,035	2,579	1,270†	1,320
1890 ...	—	—	—	15,487*	—	—	10,329*	2,798*	1,391*†	1,600*
1891 ...	—	8,100	8,066	16,166	5,175	4,902	10,077	2,673	976†	1,650
1892 ...	4,322	8,074	7,952	16,026	4,934	4,708	9,642	2,664	1,279	1,411
1893 ...	4,103	7,949	7,932	15,881	5,315	5,130	10,445	3,146	1,520	1,631
1894 ...	4,241	7,831	7,674	15,505	4,659	4,287	8,946	2,539	1,237	1,549
1895 ...	4,442	8,032	7,981	16,014	5,154	4,708	9,863	2,910	1,350	1,656
1896 ...	5,024	8,392*	8,190*	16,582*	5,354*	5,051*	10,405*	3,265*	1,846*	1,554*
1897 ...	5,515	8,602	8,169	16,771	5,572	5,096	10,668	3,594	1,909	1,489

* 53 weeks. † Membranous Croup not included.

1.—Population at Census 1891, 478,116.

2.—Number of Inhabited Houses at Census 1891, 95,516.

3.—Average number of Persons in each House at Census 1891, 5·0.

4.—Area of the City, in acres, 12,705.

TABLE II.

POPULATION, MARRIAGE-RATES, BIRTH-RATES, AND DEATH-RATES IN THE TWELVE YEARS 1886–1897.

YEAR.	Estimated Population.	Persons to an Acre.	Marriage-rate per 1,000 persons living.	Birth-rate per 1,000 persons living.	Death-rate per 1,000 persons living.	Death-rate in Infants under One Year per 1,000 Births.	Death-rate from Seven chief Zymotic Diseases.	Deaths in Public Institutions; Percentage on total deaths.
1886	458,110	36·1	—	34·2	20·1	174	3·2*	13·5
1887	462,251	36·4	—	33·2	20·0	174	3·1*	13·6
1888	466,430	36·7	—	32·4	18·2	152	2·0*	14·1
1889	470,646	37·0	—	32·7	19·2	168	2·7*	14·6
1890	474,900	37·4	—	32·1	21·4	181	2·9*	15·5
1891	479,193	37·7	—	33·8	21·1	165	2·0*	16·4
1892	483,526	38·1	17·9	33·2	20·0	166	2·7	14·6
1893	487,897	38·4	16·9	32·6	21·5	198	3·1	15·6
1894	492,301	38·7	17·3	31·6	18·2	164	2·5	17·3
1895	496,751	39·1	17·9	32·3	19·9	182	2·7	16·8
1896	501,241	39·5	20·0	32·5	20·4	197	3·6	14·9
1897	505,772	39·8	21·9	33·2	21·1	214	3·8	14·0
Average of 5 years prior to 1897.	492,343	38·8	18·0	32·4	20·0	181	2·9	15·8

* Membranous Croup not included.

TABLE III.

Table of Deaths Registered in the City of Birmingham during the Year ending January 1st, 1898.

1898.	AGES.								WARDS.																		Institutions.	City.
	0—1	1—5	5—10	10—15	15—25	25—45	45—65	65 and up.	Rotton Park.	All Saints'.	Ladywood.	St. Paul's.	St. George's.	St. Stephen's	St. Mary's.	St. Bartholomew's.	Market Hall.	St. Thomas's	St. Martin's.	Edgbaston & Harborne.	Deritend.	Bordesley.	Duddeston.	Nechells.	Balsall Heath	Saltley.		
ALL CAUSES	3594	1648	247	119	409	1334	1795	1522	700	660	452	275	471	603	347	656	190	423	457	363	584	729	505	671	563	530	1489	10668
I.—Specific Febrile or Zymotic Diseases.																												
1.—Miasmatic Diseases.																												
Small-pox	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Measles	102	295	17	..	..	..	..	..	22	25	32	7	24	36	8	34	6	24	36	10	27	23	32	40	4	21	3	414
Scarlet Fever	6	56	25	4	3	1	..	..	2	1	..	..	1	..	2	..	..	..	2	2	2	2	..	2	1	1	77	95
Typhus Fever	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Whooping Cough	91	132	4	..	..	..	..	..	18	26	17	7	23	17	9	15	3	2	10	4	4	21	4	18	16	10	3	227
Diphtheria	13	83	30	3	1	..	..	..	6	6	3	..	8	8	1	4	1	3	2	6	1	16	1	8	12	8	36	130
Membranous Croup	6	19	5	..	..	..	..	..	1	..	..	3	1	6	3	3	..	..	1	1	..	2	..	4	1	1	3	30
Simple Continued, or Ill-defined Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric or Typhoid Fever	1	5	7	8	33	29	6	..	4	6	2	..	2	3	4	5	1	6	..	3	6	8	6	8	4	5	16	89
Influenza	8	4	2	1	7	18	13	6	11	3	1	..	4	..	..	3	1	..	2	1	3	18	.	1	7	4	..	59
Other Miasmatic Diseases	2	3	1	..	..	..	..	..	..	2	..	..	1	..	..	1	.	1	..	..	..	..	..	..	..	1	..	6
2.—Diarrhœal Diseases.																												
Simple Cholera..	4	1	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	1	..	..	..	..	2	..	..	..	5
Diarrhœa, Dysentery..	727	142	2	1	..	4	9	33	55	79	32	25	47	50	19	99	15	51	49	36	68	62	49	65	34	55	28	918
3.—Malarial Diseases.																												
Remittent Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ague	..	..	..	..	..	..	..	.	..	..	..	..	..	..	..	..	..	..	..	..	.	..	..	..	..	..	..	..
4.—Zoogenous Diseases																												
Cowpox and effects of Vaccination	..	..	.	..	..	..	.	..	..	..	..	..	..	..	..	..	.	..	..	..	..	..	..	..	..	..	.	.
Other Diseases (*e.g.*, Hydrophobia, Glanders, Splenic Fever)	..	..	..	..	.	..	1	.	..	..	.	..	.	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
5.—Venereal Diseases.																												
Syphilis	26	1		..	.	1	..	..	2	3	3	2	1	3	..	3	..	..	2	..	1	..	2	1	..	1	4	28
Gonorrhœa, Stricture of Urethra.. ..	..	..	..	..	..	3	8		..	..	..	..	..	..	..	1	1	1	1	..	..	..	..	..	1	1	5	11
6.—Septic Diseases.																												
Erysipelas	5	4	..	..	1	3	4	4	1	2	1	1	2	2	..	1	..	..	1	..	..	..	..	..	5	..	5	21
Pyæmia, Septicæmia	..	1	1	..	2	4	.	1	..	1	..	..	..	..	..	..	..	..	..	1	2	..	1	1	.	..	3	9
Puerperal Fever	..	..	..	..	3	6	..	..	..	..	..	.	1	1	1	..	..	..	1	..	1	..	1	..	1	1	1	9
II.—Parasitic Diseases.																												
Thrush, and other Vegetable Parasitic Diseases	2	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	3
Worms, Hydatids, and other Animal Parasitic Diseases	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*	*j*	*k*	*l*	*m*	*n*	*o*	*p*	*q*	*r*	*s*	*t*	*u*	*v*	*w*	*x*	*y*	*z*	*	+

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	'	†
III.—Dietic Diseases.																												
Want of Breast Milk, Starvation	19	..	..	..	..	..	..	..	1	1	1	..	..	1	..	2	1	..	1	..	3	2	1	..	3	..	2	19
Scurvy	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Chronic Alcoholism, Delirium Tremens ..	..	..	..	..	1	31	23	1	3	4	1	2	2	2	..	3	3	1	2	3	2	6	3	4	3	1	11	56
IV.—Constitutional Diseases.																												
Rheumatic Fever, Rheumatism of the Heart	..	1	2	4	7	11	6	1	2	..	1	1	1	..	..	1	1	2	2	3	5	4	..	1	1	3	4	32
Rheumatism	1	..	..	1	..	2	8	4	1	..	..	1	1	1	..	..	..	..	2	1	..	1	1	1	1	1	4	16
Gout	..	..	..	..	..	..	3	3	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	2	6
Rickets	5	15	..	..	..	..	..	..	2	..	2	2	1	1	..	..	1	..	3	1	1	1	2	..	1	..	2	20
Cancer, Malignant Disease	1	..	..	2	4	67	224	78	32	20	10	6	16	14	7	13	4	15	16	17	10	23	11	18	29	22	93	376
Tabes Mesenterica	41	15	1	..	..	..	..	..	8	1	4	2	..	5	6	5	2	2	2	..	2	7	2	3	2	4	..	57
Tubercular Meningitis, Acute Hydrocephalus	28	39	5	2	3	2	..	..	9	4	4	3	3	5	2	3	1	2	1	3	2	11	3	8	4	3	8	79
Phthisis	6	9	7	8	116	352	165	16	41	43	24	18	23	35	26	27	9	36	29	25	32	39	25	39	38	28	142	679
Other forms of Tuberculosis, Scrofula	42	34	9	5	13	11	8	..	13	9	5	2	4	5	2	6	1	..	3	..	5	6	5	17	4	6	29	122
Purpura, Hæmorrhagic Diathesis	2	..	..	1	..	..	..	1	..	..	..	..	..	..	1	..	..	..	1	..	..	2	..	..	..	..	..	4
Anæmia, Chlorosis, Leucocythæmia	..	3	2	2	4	7	8	1	3	..	1	1	..	..	..	2	..	1	1	5	3	4	..	1	2	..	3	27
Glycosuria, Diabetes Mellitus	..	..	..	1	2	8	16	5	2	2	1	..	1	3	..	..	..	1	..	1	3	4	1	..	1	2	10	32
Other Constitutional Diseases	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
V.—Developmental Diseases.																												
Premature Birth	424	1	..	..	..	..	..	..	50	32	30	10	21	23	11	34	4	11	12	16	31	35	34	22	16	15	18	425
Atelectasis	25	..	..	..	..	..	..	..	..	1	4	..	1	1	1	2	1	..	3	1	1	3	..	2	2	2	..	25
Congenital Malformations	35	3	..	..	..	1	..	..	2	7	2	..	..	1	1	4	..	2	3	2	5	..	1	1	1	1	6	39
Old Age	..	..	..	..	..	..	12	470	33	23	23	14	19	22	11	15	4	18	24	23	23	34	26	21	25	22	102	482
VI.—Local Diseases.																												
1.—Diseases of Nervous System.																												
Inflammation of Brain or Membranes	61	58	12	1	5	18	16	7	8	4	12	4	6	5	3	8	3	7	13	11	10	11	15	16	9	9	24	178
Apoplexy, Softening of Brain, Hemiplegia, Brain Paralysis	..	1	..	..	2	33	150	157	28	18	11	10	12	16	7	17	8	12	10	19	28	22	13	21	23	21	47	343
Insanity, General Paralysis of the Insane ..	..	..	..	..	..	18	20	20	..	4	..	..	..	..	..	2	1	3	..	..	1	1	..	1	1	..	44	58
Epilepsy	..	3	2	..	5	11	15	3	2	1	2	..	1	1	..	1	..	2	1	3	1	4	1	2	3	3	11	39
Convulsions	181	34	7	..	..	..	..	..	7	10	15	7	14	14	10	27	3	9	18	4	21	19	14	7	9	11	3	222
Laryngismus Stridulus (Spasm of Glottis)	4	2	..	..	..	..	..	..	1	1	..	..	..	..	1	..	1	1	..	..	..	..	..	1	..	..	..	6
Disease of Spinal Cord, Paraplegia, Paralysis Agitans	1	1	2	1	3	9	18	11	2	2	2	..	3	3	2	1	1	1	1	2	3	3	..	3	2	5	10	46
Other Diseases of Nervous System	6	10	2	1	4	13	10	1	3	3	2	1	1	4	1	2	..	1	3	1	6	3	1	1	4	3	7	47
2.—Diseases of Organs of Special Sense. (*e.g.*, of Ear, Eye, and Nose).	7	2	3	5	5	3	..	..	1	..	..	3	1	2	1	2	2	1	..	..	1	1	..	1	1	..	8	25
3.—Diseases of Circulatory System.																												
Pericarditis	..	2	2	2	3	4	..	..	1	..	1	1	..	..	..	..	..	..	..	1	..	..	1	..	1	..	7	13
Acute Endocarditis	..	2	1	2	1	6	1	1	1	..	2	..	..	..	..	..	..	..	1	..	1	2	..	..	..	2	5	14
Valvular Diseases of Heart	1	..	3	9	10	49	68	31	8	15	8	5	9	8	7	7	..	9	7	4	3	9	11	9	7	7	38	171
Other Diseases of Heart	18	2	7	8	22	95	170	121	30	31	15	15	17	30	16	23	15	20	18	20	21	34	25	24	46	18	25	443
Aneurism	..	..	..	..	1	9	4	3	..	1	..	..	1	..	1	1	1	..	..	..	..	1	1	1	..	1	8	17
Embolism, Thrombosis	..	..	..	..	..	3	6	2	..	1	..	..	1	..	..	3	..	..	..	1	..	1	..	..	1	1	2	11
Other Diseases of Blood Vessels	..	..	..	..	..	4	8	8	2	1	..	1	..	..	..	2	..	..	..	1	1	1	1	1	1	..	8	20

TABLE OF DEATHS REGISTERED IN THE CITY OF BIRMINGHAM DURING THE QUARTER ENDING JANUARY 1ST, 1898—(*continued.*)

1898.	AGES.								WARDS.																			City.
	0—1	1—5	5—10	10—15	15—25	25—45	45—65	65 and up.	Rotton Park.	All Saints'.	Ladywood.	St. Paul's.	St. George's.	St. Stephen's.	St. Mary's.	St. Bartholomew's.	Market Hall.	St. Thomas's.	St. Martin's.	Edgbaston & Harborne.	Deritend.	Bordesley.	Duddeston.	Nechells.	Balsall Heath	Saltley.	Institutions.	
Local Diseases—*continued.*																												
4.—DISEASES OF RESPIRATORY SYSTEM.																												
Laryngitis	1	7	1	..	..	..	3	..	1	..	1	..	..	..	..	..	..	2	..	2	..	1	..	1	1	1	2	12
Croup	3	7	1	..	..	..	..	..	1	..	2	..	..	..	..	..	1	1	1	..	..	..	2	3	..	..	..	11
Emphysema, Asthma	..	..	..	..	..	1	15	6	3	2	..	..	..	...	..	1	..	3	2	2	..	3	1	3	..	..	2	22
Bronchitis	283	150	5	2	1	66	259	295	48	59	27	30	66	63	41	77	20	53	36	35	60	95	56	66	47	60	122	1061
Pneumonia	147	224	15	13	48	131	135	51	56	43	34	18	31	53	29	56	10	33	21	21	30	53	48	60	29	44	92	764
Pleurisy	2	8	3	1	6	14	7	4	3	1	3	1	4	1	4	..	1	1	2	2	3	1	1	5	1	1	10	45
Other Diseases of Respiratory System ..	20	17	6	..	3	10	21	6	5	14	3	1	4	1	1	6	1	2	11	..	3	5	4	5	5	9	3	83
5.—DISEASES OF DIGESTIVE SYSTEM.																												
Dentition	52	31	..	..	..	..	..	..	15	9	9	..	..	4	2	5	1	3	.	1	3	5	3	13	4	6	..	83
Sore Throat, Quinsy	1	2	2	..	1	1	..	..	..	..	..	..	..	..	1	..	..	1	..	..	1	1	1	..	1	1	..	7
Diseases of Stomach	46	9	1	..	8	22	16	8	10	8	2	2	1	7	5	2	6	2	5	4	17	3	11	10	6	6	3	110
Enteritis	391	78	10	8	5	10	7	12	32	26	14	14	31	66	41	42	6	18	18	9	34	25	15	30	56	19	25	521
Obstructive Diseases of Intestines	10	1	..	2	..	4	9	14	3	1	1	..	.	2	..	..	1	3	1	2	2	4	2	2	2	1	13	40
Hernia ..	3	..	1	..	..	2	16	10	2	1	1	..	1	..	..	..	..	1	2	1	1	2	..	..	1	1	18	32
Peritonitis	2	3	3	4	8	7	7	2	3	2	2	1	2	3	..	2	1	..	..	..	2	1	4	2	2	4	5	36
Ascites	1		..	..	..	..	..	1	..	..	.	..	..	..	..	.	..	.	..	..	..	1	..	..	..	..	1	2
Cirrhosis of Liver	..	..	1	..	..	29	68	14	6	6	5	4	3	1	5	3	8	5	7	6	12	8	2	7	10	5	9	112
Jaundice, and other Diseases of Liver ..	18	4	1	..	..	9	15	7	4	1	2	1	..	1	2	2	1	4	7	3	5	3	2	3	5	1	4	54
Other Diseases of Digestive System	6	5	1	..	2	5	7	4	5	1	1	.	2	..	..	..	2	..	1	2	1	3	..	2	4	..	6	30
6 & 7.—DISEASES OF LYMPHATIC SYSTEM AND OF DUCTLESS GLANDS.																												
Diseases of Lymphatic System ..	1	.	..	..	..	1	..	..	1	..	..			..	..	..	..	..	1		..	..	..	..	..	..	..	2
Diseases of Spleen	..	.	..	..	..	..	2	..	1	..	..	.	.	..	..	..	..	..	..	1	..	..	..	..	..	..	..	2
Bronchocele, Addison's Disease	..	..	.	..	3	5	..	.	1	..	..	.	..	..	1	..	..	..	1	..	..	1	..	..	1	1	2	8
8.—DISEASES OF URINARY SYSTEM.																												
Acute Nephritis	1	4	2	..	5	16	19	6	2	..	1	4	5	1	..	3	..	4	1	1	1	1	1	4	2	4	18	53
Bright's Disease, Albuminuria	2	1	1	..	9	29	61	20	7	5	7	4	3	6	2	6	2	1	9	5	9	8	7	5	8	2	27	123
Disease of Bladder or of Prostate.. ..	..	1	.	..	..	1	7	23	..	2	2	1		1	..	..	1	1	2	3	1	2	..	.	1	..	15	32
Other Diseases of the Urinary System ..	..	..		..	2	4	14	6	2	1	1	.	1	1	1	..	1	..	1	1	3	1	..	2	2	..	8	26
9.—DISEASES OF REPRODUCTIVE SYSTEM. (A) Of Organs of Generation.																												
Male Organs	1	..	.	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	2
Female Organs	..	1	..	..	3	18	7	1	1	1	..	6	1	1	..	2	3	1	..	5	1	..	2	1	..	1	4	30
	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*	*j*	*k*	*l*	*m*	*n*	*o*	*p*	*q*	*r*	*s*	*t*	*u*	*v*	*w*	*x*	*y*	*z*	*	†

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	*	†
(B) Of Parturition.																												
Abortion, Miscarriage	..	..	..	..	..	2	..	..	..	..	..	..	.	..	..	..	..	..	.	..	..	1	..	1	..	..	..	2
Puerperal Convulsions	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	2
Placenta Prævia, Flooding	..	..	..	..	..	9	1	..	..	1	3	..	..	1	1	1	..	..	1	..	..	1	..	..	1	..	..	10
Other Accidents of Child-birth	..	..	..	..	10	17	..	..	..	4	4	..	..	2	1	2	..	..	1	..	1	1	1	2	3	2	3	27
10.—DISEASES OF BONES AND JOINTS.																												
Caries, Necrosis	..	3	..	1	2	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	7	9
Arthritis, Ostitis, Periostitis	1	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	3
Other Diseases of Bones and Joints	3	..	2	1	.	2	3	..	1	..	..	..	..	..	..	..	..	1	1	.	3	..	..	..	..	..	5	11
11.—DISEASES OF INTEGUMENTARY SYSTEM.																												
Carbuncle, Phlegmon	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Other Diseases of Integumentary System	11	4	..	..	..	1	5	2	1	2	1	..	..	1	1	..	..	1		..	1	2	1	2	4	.	6	23
VII.—Deaths from Violence.																												
1.—ACCIDENT OR NEGLIGENCE.																												
Fractures and Contusions	..	6	7	3	16	23	35	19	3	2	3	2	1	1	2	4	5	..	..	3	3	3	2	1	1	3	70	109
Gunshot Wounds	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cut, Stab	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Burn, Scald	3	43	11	4	3	4	7	4	2	1	..	..	..	..	..	2	1	1	..	..	..	..	..	2	..	2	68	79
Poison	..	..	1	..	2	6	1	2	..	..	..	..	1	1	..	..	2	..	2	..	..	..	..	..	..	2	4	12
Drowning	..	1	6	7	..	3	2	..	6	..	2	..	..	..	2	1	..	2	..	..	..	2	..	1	1	2	..	19
Suffocation	87	1	..	..	2	5	..	..	5	5	7	3	6	13	5	8	5	2	5	3	11	2	2	7	4	2	..	95
Otherwise	4	1	..	..	..	1	3	2	1	..	1	..	..	..	1	1	1	..	..	1	1	..	..	..	1	..	3	11
2.—HOMICIDE.																												
Manslaughter	3	..	..	..	2	4	..	..	..	..	..	..	..	1	..	1	..	..	..	..	2	..	..	..	..	..	5	9
Murder	2	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..		..	..	..	..	1	..	1	..	..	1	3
3.—SUICIDE.																												
Gunshot Wounds	..	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	2	..	1	..	..	..	..	..	..	..	1	4
Cut, Stab	..	..	..	..	..	2	2	3	..	..	1	..	1	..	..	1	..	..	..	1	..	..	..	..	..	..	3	7
Poison	..	..	..	..	3	5	4	..	1	..	..	1	..	..	..	..	..	..	..	1	..	1	..	..	..	..	8	12
Drowning	..	..	..	..	1	1	3	..	1	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	..	1	5
Hanging	..	..	..	..	..	5	7	2	1	2	1	2	..	2	..	..	1	..	..	2	..	1	..	..	..	1	1	14
Otherwise	..	..	..	..	..	..	4	..	1	1	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	4
4.—EXECUTION.																												
Hanging	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
VIII.—Deaths from Ill-defined and not Specified Causes.																												
Dropsy	..	..	..	..	..	2	4	1	1	1	1	..	..	..	..	..	..	2	..	..	1	..	1	..	..	..	..	7
Debility, Atrophy, Inanition, Marasmus	565	49	2	..	..	1	6	..	39	58	30	25	31	37	29	37	12	28	28	8	26	36	39	53	28	44	35	623
Mortification	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	2
Tumour	1	1	..	..	2	1	3	1	..	1	..	1	1	..	..	1	..	..	..	..	..	..	..	..	..	2	3	9
Abscess	1	..	..	..	..	1	..	..	..	..	..	..	..	..	.	..	..	..	1	1	..	..	..	..	..	..	..	2
Hæmorrhage	1	..	..	..	..	2	2	3	..	..	3	..	1	..	..	2	..	..	1	..	..	..	..	..	..	1	..	8
Causes Ill-defined or not Specified	19	2	2	1	..	7	2	2	4	3	1	..	..	1	6	5	..	1	..	1	5	2	2	..	1	1	2	35

TABLE IV.

Deaths from the Principal Zymotic Diseases in the Twelve Years, 1886 to 1897.

		1886.	1887.	1888.	1889.	1890.*	1891.	1892.	1893.	1894.	1895.	1896.*	1897.	Annual Average of 5 years prior to 1897
Smallpox		0	2	0	0	0	7	0	70	171	8	4	0	51
Measles		402	251	202	214	354	107	340	48	316	133	310	414	229
Scarlet Fever ...		42	37	40	162	218	95	68	68	75	133	154	95	100
Diphtheria		80	67	48	59	66	43	67	43	50	163	246	130	114
Membranous Croup		?	?	?	?	?	?	35	40	41	51	47	30	43
Whooping Cough ...		99	403	248	297	224	303	285	321	219	173	386	227	277
Fever	Typhus	0	0	0	0	0	0	0	0	0	0	0	1	0
	Enteric or Typhoid	63	77	64	45	64	80	39	94	105	82	108	89	86
	Continued ..	6	8	5	4	2	1	2	8	4	2	2	0	4
Diarrhœa		770	579	317	489	463	340	443	828	256	605	589	923	544

* 53 weeks.

TABLE V.

Deaths from certain Causes in the Years 1891–1897.

DEATHS FROM	1891	1892	1893	1894	1895	*1896	1897
Cancer	324	293	313	303	332	346	376
Phthisis	815	716	775	630	718	694	679
Other Tubercular Diseases	266	265	270	229	287	258	258
Premature Birth	295	345	359	346	376	384	425
Old Age	477	348	541	388	510	430	482
Bronchitis, Pneumonia, and Pleurisy	2,469	2,100	2,188	1,811	1,770	1,838	1,870
Diseases of Nervous System	902	864	915	861	931	989	939
Diseases of Heart	673	684	584	586	613	628	641
Diseases of Digestive System	570	597	712	582	772	828	1,027
Diseases of Urinary System	222	225	256	215	207	230	234
Accident or Negligence	356	292	296	280	329	279	326
Debility, Atrophy, Inanition, and Marasmus ...	593	592	750	615	658	677	623

* 53 weeks.

TABLE VI.

Birth-rates and Death-rates in 33 Great Towns during 1897. *(Extracted from the Registrar General's Annual Summary.)*

Cities and Boroughs.	Birth-Rate.	Death Rates per 1000 Persons living from									Deaths under 1 Year to 1000 Births.	Percentage to Total Deaths.		Cities and Boroughs.
		All causes.	Principal Zymotic Diseases.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping Cough.	Fever.	Diarrhœa.		Inquest Cases.	Uncertified Causes of Death.	
33 Towns - -	30·7	19·1	2·87	0·00	0·55	0·18	0·31	0·41	0·18	1·24	177	7·5	1·3	33 Towns.
London* - - -	30·0	18·2	2·58	0·00	0·43	0·18	0·51	0·41	0·13	0·92	159	9·3	0·6	London.*
West Ham - -	32·2	15·7	2·61	—	0·51	0·11	0·37	0·36	0·18	1·08	172	6·1	2·7	West Ham.
Croydon - - -	25·0	13·1	1·43	—	0·14	0·10	0·07	0·26	0·07	0·79	135	7·7	—	Croydon.
Brighton - - -	24·7	15·1	1·64	—	0·14	0·10	0·10	0·21	0·18	0·91	144	6·5	0·8	Brighton.
Portsmouth - -	26·9	16·2	2·53	—	0·19	0·06	0·15	0·35	0·24	1·54	168	7·0	0·4	Portsmouth.
Plymouth - -	28·5	19·0	2·17	—	0·50	0·05	0·13	0·54	0·08	0·87	185	6·0	0·3	Plymouth.
Bristol - - -	27·8	17·2	1·83	0·00	0·25	0·08	0·15	0·50	0·20	0·65	149	9·0	0·9	Bristol.
Cardiff - - -	31·1	14·9	2·19	—	0·44	0·10	0·53	0·20	0·12	0·80	151	7·3	0·9	Cardiff.
Swansea - - -	29·4	15·8	1·36	—	0·45	0·10	0·11	0·42	0·07	0·21	140	6·2	1·2	Swansea.
Wolverhampton	35·1	22·0	4·22	—	0·53	0·24	0·62	0·44	0·28	2·11	217	6·5	0·6	Wolverhampton.
Birmingham* -	33·3	21·6	3·88	—	0·79	0·18	0·29	0·44	0·18	2·00	214	4·3	3·2	Birmingham.*
Norwich - - -	30·5	18·8	2·21	—	0·03	0·10	0·09	0·43	0·29	1·27	194	6·2	1·5	Norwich.
Leicester - -	30·6	17·7	3·13	—	0·07	0·35	0·36	0·40	0·19	1·76	205	7·1	2·4	Leicester.
Nottingham - -	28·9	18·8	2·81	—	0·21	0·15	0·09	0·49	0·21	1·66	206	6·5	1·1	Nottingham.
Derby - - - -	27·1	16·0	1·92	—	0·17	0·10	0·09	0·21	0·25	1·10	168	9·7	—	Derby.
Birkenhead - -	31·6	18·3	2·45	—	0·50	0·21	0·23	0·29	0·24	0·98	164	7·1	1·1	Birkenhead.
Liverpool - -	35·3	24·4	3·83	—	0·54	0·33	0·20	0·56	0·27	1·93	200	6·6	3·4	Liverpool.
Bolton - - -	32·6	22·0	4·02	—	1·78	0·19	0·05	0·34	0·21	1·45	186	8·3	0·2	Bolton.
Manchester - -	23·2	23·1	3·81	—	1·18	0·23	0·09	0·56	0·19	1·56	195	7·1	1·2	Manchester.
Salford - - -	35·1	23·9	5·50	—	2·22	0·29	0·15	0·53	0·31	2·00	219	5·8	1·8	Salford.
Oldham - - -	26·1	19·2	2·61	—	0·67	0·14	0·08	0·53	0·14	1·05	183	5·7	0·2	Oldham.
Burnley - - -	29·8	19·5	3·98	—	1·33	0·05	0·57	0·60	0·18	1·25	220	4·5	1·5	Burnley.
Blackburn - -	27·7	19·5	3·45	—	1·11	0·05	0·06	0·63	0·29	1·31	206	4·7	2·2	Blackburn.
Preston - - -	31·9	24·4	5·63	—	2·77	0·04	0·03	0·26	0·30	2·23	262	3·1	3·2	Preston.
Huddersfield -	23·4	16·4	1·50	—	0·27	0·32	0·20	0·21	0·15	0·35	131	4·3	2·8	Huddersfield.
Halifax - - -	22·5	16·5	1·39	—	0·50	0·22	0·09	0·09	0·17	0·32	140	5·5	2·5	Halifax.
Bradford - -	24·6	17·4	2·22	—	0·35	0·04	0·07	0·19	0·13	1·44	179	5·6	1·2	Bradford.
Leeds - - - -	31·6	19·9	2·80	—	0·40	0·23	0·16	0·24	0·20	1·57	190	7·7	0·6	Leeds.
Sheffield - -	34·4	21·2	3·49	—	0·56	0·26	0·13	0·40	0·31	1·83	198	4·2	2·8	Sheffield.
Hull - - - -	33·4	18·6	3·25	0·00	0·11	0·27	0·14	0·25	0·25	2·23	181	7·2	1·6	Hull.
Sunderland - -	34·6	19·7	2·56	—	0·44	0·08	0·03	0·54	0·27	1·20	165	6·9	1·0	Sunderland.
Gateshead - -	35·8	18·3	2·33	—	0·50	0·17	0·08	0·31	0·20	1·07	172	6·0	0·7	Gateshead.
Newcastle - -	31·3	19·1	2·09	—	0·43	0·10	0·12	0·28	0·16	1·00	178	8·7	0·9	Newcastle.

TABLE VII.

NUMBER OF CASES REPORTED UNDER THE INFECTIOUS DISEASE (NOTIFICATION) ACT, 1889, DURING EACH WEEK OF THE YEAR 1897.

Week. Number.	Week. Date of ending.	Smallpox.	Scarlet Fever.	Diphtheria.	Membranous Croup.	Typhus Fever	Typhoid Fever.	Simple Continued Fever.	Relapsing Fever.	Puerperal Fever.	Cholera.	Erysipelas.	TOTAL.
	1897.												
1	January 9th	...	27	14	2	...	10	...	...	...	...	17	70
2	,, 16th	...	23	16	...	...	12	...	...	1	...	15	67
3	,, 23rd	...	41	21	...	...	9	...	...	1	...	5	77
4	,, 30th	...	22	15	1	...	4	...	..	...	...	13	55
5	February 6th	...	29	15	...	...	11	1	...	...	...	9	65
6	,, 13th	...	36	13	2	...	11	...	...	1	...	7	70
7	,, 20th	...	37	16	2	...	13	...	..	...	...	7	75
8	,, 27th	...	46	19	2	...	11	...	...	1	...	14	93
9	March 6th	...	26	10	...	...	8	...	...	...	...	7	51
10	,, 13th	...	18	15	...	...	14	...	...	...	...	7	54
11	,, 20th	...	32	6	3	...	11	...	...	...	...	9	61
12	,, 27th	...	35	12	3	...	13	...	...	...	...	13	76
13	April 3rd	...	30	11	3	...	8	...	...	...	...	12	64
14	,, 10th	...	39	12	4	...	9	...	...	...	...	13	77
15	,, 17th	...	35	4	1	...	6	...	...	...	...	13	59
16	,, 24th	...	32	19	1	...	5	...	...	1	...	11	69
17	May 1st	...	22	12	...	1	9	...	...	...	...	16	60
18	,, 8th	...	30	14	...	...	21	...	...	1	...	13	79
19	,, 15th	...	24	15	2	...	6	...	...	1	...	7	55
20	,, 22nd	...	17	17	2	...	7	...	...	1	...	14	58
21	,, 29th	...	38	20	...	...	8	...	...	...	...	17	83
22	June 5th	...	33	14	1	...	5	..	...	...	...	7	60
23	,, 12th	...	35	13	2	...	6	...	...	...	...	7	63
24	,, 19th	...	34	7	...	...	4	...	...	...	...	8	53
25	,, 26th	...	34	8	1	...	5	...	...	...	...	9	57
26	July 3rd	..	32	10	...	...	5	...	...	...	...	5	52
27	,, 10th	...	40	13	...	...	6	...	...	...	...	6	65
28	,, 17th	...	43	11	1	...	4	...	...	...	...	11	70
29	,, 24th	...	38	8	1	...	6	...	...	...	...	12	65
30	,, 31st	...	34	10	...	...	7	..	...	1	..	10	62
31	August 7th	...	31	7	1	...	3	...	...	...	...	7	49
32	,, 14th	...	42	9	1	...	3	...	...	...	...	15	70
33	,, 21st	...	43	11	...	...	14	...	...	...	...	11	79
34	,, 28th	...	45	11	1	...	14	...	...	...	...	9	80
35	September 4th	...	51	11	1	...	14	...	...	...	...	8	85
36	,, 11th	...	49	10	1	...	22	...	...	1	...	15	98
37	,, 18th	...	68	7	2	...	13	...	...	...	...	9	99
38	,, 25th	...	44	10	4	...	9	...	...	...	..	9	76
39	October 2nd	...	59	15	...	...	9	...	...	...	...	9	92
40	,, 9th	...	68	10	1	...	12	...	...	...	...	10	101
41	,, 16th	...	60	9	2	...	9	...	...	...	...	8	88
42	,, 23rd	...	49	20	1	...	25	...	...	...	...	8	103
43	,, 30th	...	43	21	1	...	9	...	...	2	...	19	95
44	November 6th	...	61	20	3	...	13	...	...	...	...	14	111
45	,, 13th	...	46	9	2	...	13	...	...	2	...	16	88
46	,, 20th	...	44	21	...	...	11	...	...	...	...	14	90
47	,, 27th	...	36	13	1	...	16	...	...	...	...	18	84
48	December 4th	...	46	10	...	...	9	...	...	...	..	9	74
49	,, 11th	...	35	9	1	...	16	...	...	...	...	13	74
50	,, 18th	...	17	10	...	...	13	...	...	...	...	20	60
51	,, 25th	...	12	10	...	...	10	...	...	1	...	13	46
	1898.												
52	January 1st	...	18	12	1		22	...	...	2	...	17	72
	TOTALS ...	...	1929	655	58	1	533	1	...	17	...	585	3779

Cases admitted to City Hospital:—Small-pox, 0: Scarlet Fever, 1,641.

TABLE VIII.

Cases of Infectious Disease Notified during the Year ending January 1st, 1898.

Classified according to ages, wards, and institutions.

DISEASES.	AGES.								WARDS.																		Institutions.	CITY.
	0 to 1.	1 to 5.	5 to 10.	10 to 15.	15 to 25.	25 to 45.	45 to 65.	65 and up.	Rotton Park.	All Saints'.	Ladywood.	St. Paul's.	St. George's.	St. Stephen's.	St. Mary's.	St. Bartholomew's.	Market Hall.	St. Thomas's.	St. Martin's.	Edgbaston and Harborne.	Deritend.	Bordesley.	Duddeston.	Nechells.	Balsall Heath.	Saltley.		
SMALLPOX ..	..	..	..	..	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
SCARLET FEVER ..	28	531	752	331	225	58	4	..	116	104	83	30	88	107	64	78	35	92	79	261	94	192	68	124	179	82	20	1929
DIPHTHERIA	15	183	169	74	114	83	16	1	70	51	33	20	36	34	11	28	10	23	28	36	24	59	27	46	72	41	6	655
MEMBRANOUS CROUP.	7	40	11	..	..	..	..	..	4	4	1	4	..	5	4	5	..	3	4	2	1	6	1	6	2	5	1	58
TYPHUS FEVER.. ..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	.	..	..	..	..	.	..	..	..	.	1
TYPHOID FEVER .	1	32	80	71	195	127	26	1	38	37	24	21	31	15	17	30	8	25	22	10	13	39	30	31	40	41	1	533
SIMPLE CONTINUED FEVER	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	.	..	..	..	..	1	..	..	..	..	1
RELAPSING FEVER ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
PUERPERAL FEVER ..	..	..	..	..	4	13	..	..	1	..	.	..	1	2	1	2	.	..	1	..	2	2	1	1	2	1	..	17
CHOLERA..	..	..	..	..	..	..	..	..	..	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
ERYSIPELAS	24	35	39	25	80	180	146	56	57	29	11	12	25	23	22	52	16	33	17	21	28	52	24	41	41	41	10	585
Totals .	75	821	1051	501	619	61	193	58	316	225	183	87	181	216	119	195	69	176	151	333	192	350	152	219	336	211	38	3779

TABLE IX.

Cases of Infectious Disease Notified during each of the Six Years, 1892–1897.

	1892.	1893.	1894.	1895.	1896.	1897.	Average of five years, prior to 1897.
Smallpox	27	979	2,074	100	14	0	639
Scarlet Fever	1,418	1,614	1,788	2,964	3,389	1929	2,235
Diphtheria	456	322	316	640	1,100	655	567
Membranous Croup ...	77	65	90	101	94	58	85
Typhus Fever	0	4	0	0	0	1	1
Typhoid Fever	260	489	511	436	483	533	436
Simple Continued Fever	5	25	7	4	6	1	9
Relapsing Fever	1	0	0	0	1	0	0
Puerperal Fever	40	54	42	24	31	17	38
Cholera	0	0	0	0	0	0	0
Erysipelas	569	852	772	818	782	585	759
Total ...	2,853	4,404	5,600	5,087	5,900	3779	4,769

TABLE X.

Temperature of the Air and Ground, Rainfall, Sunshine, and Wind, in each Month of the Year 1897.

Observed at the Birmingham and Midland Institute Observatory, Edgbaston, by Mr. Alfred Cresswell.

MONTH.	TEMPERATURE OF THE AIR.						TEMPERATURE OF THE GROUND.		HOURS OF SUNSHINE.		RAINFALL IN INCHES.		DAYS ON WHICH RAIN FELL.	MILES OF WIND.	
	Highest in the shade.		Lowest in the shade.		Mean for the month.										
	1897.	Above or below the previous highest.*	1897.	Above or below the previous highest.*	1897.	Above or below the average.*	Highest 1 foot deep.	Highest 4 feet deep.	1897.	Above or below the average.*	1897.	Above or below the average.*		1897.	Above or below the average.*
January ..	47·8	− 10·2	21·9	+ 11·1	33·7	− 2·5	42·2	44·6	21	− 16	1·89	+ 0·15	19	9701	− 209
February ..	55·5	− 6·4	31·0	+ 23·0	41·5	+ 4·5	45·6	43·8	37	− 18	2·54	+ 1·49	12	8534	− 721
March ..	59·6	− 5·2	29·0	+ 7·7	42·8	+ 2·5	47·2	44·9	109	+ 16	3·14	+ 1·53	17	12783	+ 2603
April	61·5	− 17·5	30·0	+ 3·0	43·5	− 1·5	48·5	45·2	81	− 32	2·02	+ 0·41	12	10319	+ 1407
May	67·1	− 10·5	33·2	+ 2·2	49·8	− 1·8	52·0	48·0	176	+ 32	1·20	− 0·72	11	10445	+ 1217
June	81·0	− 1·8	42·6	+ 4·3	58·4	+ 0·6	58·6	51·4	114	− 37	4·13	+ 2·28	13	8225	+ 365
July	78·3	− 6·3	45·0	+ 5·5	61·0	+ 1·8	59·6	53·6	161	+ 39	0·95	− 1·56	5	8238	− 429
August ..	84·4	− 1·2	47·7	+ 6·5	60·1	+ 1·6	61·7	55·0	154	+ 27	3·81	+ 0·96	17	8700	− 20
September ..	65·8	− 16·0	38·6	+ 5·6	52·9	− 2·3	54·8	54·3	86	− 26	2·48	+ 0·50	13	8685	+ 501
October ..	64·6	− 5·1	37·6	+ 9·7	49·1	+ 2·7	52·4	52·9	82	+ 10	1·31	− 1·35	11	8076	− 1022
November ..	55·8	− 5·8	31·7	+ 8·2	44·6	+ 2·1	50·2	51·0	26	− 12	1·96	+ 0·38	13	8448	− 1170
December ..	56·0	+ 0·6	24·9	+ 10·4	39·8	+ 2·3	46·5	49·0	43	+ 11	2·78	+ 0·62	13	11919	+ 2053

---

* In the ten years 1887–1896.

TABLE XI.

Temperature and Rainfall in each Month and Year from 1887 to 1897.

MONTH.	TEMPERATURE.												RAINFALL.											
	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	Average for ten years 1887-1896.	1897	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	Average for ten years 1887-1896.	1897
	°	°	°	°	°	°	°	°	°	°	°	°												
January ...	35·2	37·2	36·8	41·1	34·4	35·2	35·1	36·7	30·6	39·9	36·2	33·7	1·19	0·50	0·59	2·80	1·92	1·98	1·75	1·61	3·92	1·15	1·74	1·89
February	38·3	34·8	36·5	36·8	40·2	37·3	39·2	39·9	27·5	39·1	37·0	41·5	0·62	0·11	1·66	0·52	0·69	1·41	2·56	2·05	0·32	0·56	1·05	2·54
March ...	37·6	36·9	39·5	42·6	38·8	35·6	45·3	42·6	40·4	43·5	40·3	42·8	1·38	2·41	2·64	1·47	1·22	0·85	0·50	1·05	1·91	2·68	1·61	3·14
April ...	41·6	42·1	43·7	44·0	42·4	44·9	49·6	48·5	45·5	47·6	45·0	43·5	1·47	1·89	2·91	0·69	2·13	1·23	0·33	1·62	2·37	1·33	1·61	2·02
May ...	47·6	51·1	54·3	52·7	48·4	53·2	54·5	47·1	53·9	52·9	51·6	49·8	1·88	0·83	4·00	2·12	3·38	1·85	2·08	2·01	0·82	0·21	1·92	1·20
June ...	59·9	55·2	59·0	57·1	57·4	56·5	59·0	55·6	58·0	60·7	57·8	58·4	2·17	2·16	0·49	1·62	3·27	2·74	1·08	2·16	0·89	1·91	1·85	4·13
July ...	63·9	55·9	59·0	57·6	58·0	56·8	61·0	59·8	58·5	61·1	59·2	61·0	0·93	5·11	1·53	2·39	2·08	2·52	1·64	3·36	3·25	1·25	2·51	0·95
August ...	60·2	57·4	58·6	57·5	56·9	59·2	63·2	56·4	59·2	56·8	58·5	60·1	2·38	3·27	2·92	3·74	3·56	3·73	2·25	2·12	2·75	1·74	2·85	3·81
September	52·5	53·7	55·1	58·6	57·2	54·0	54·8	52·1	59·9	54·4	55·2	52·9	2·31	1·20	2·17	1·26	1·63	2·97	1·72	1·70	0·45	4·34	1·98	2·48
October ...	44·4	46·6	46·8	49·2	48·4	44·5	48·8	47·2	44·8	43·3	46·4	49·1	2·11	0·32	3·19	1·56	5·36	2·84	2·45	3·48	2·81	2·50	2·66	1·31
November	40·1	45·5	44·0	42·5	41·3	43·2	39·9	45·1	44·6	38·9	42·5	44·6	1·78	4·41	1·04	3·22	2·74	1·79	1·38	2·48	3·41	1·26	2·34	1·96
December	37·3	40·3	37·9	29·8	39·2	34·7	39·5	40·1	38·0	38·1	37·5	39·8	1·58	2·41	1·80	0·71	3·16	1·69	3·02	1·88	1·99	3·34	2·16	2·78
Year ...	46·5	46·4	47·6	47·5	46·9	46·3	49·2	47·6	46·7	48·0	47·3	48·1	19·80	24·62	24·94	22·10	31·14	25·60	20·76	25·52	24·89	22·27	24·28	28·21

TABLE XII.

Summary of NUISANCES Abated and other Work done during the Year 1897.

(Returns made by Mr. Parker, *Inspector of Nuisances*.)

DWELLING HOUSES.

No. of Houses cleansed	1103
,, Houses repaired	1312
,, Houses closed	101
,, Houses made fit for habitation	16
,, Houses provided with better ventilation	39
,, Cases of overcrowding remedied	40
,, Accumulations of water in cellars removed	229
,, Rain-water Spouts repaired	344

CLOSETS.

No. of Ashpit Privies converted to water closets	768
,, Pan Privies converted to water closets	105
,, Privies cleansed	381
,, Ashpits and Privies repaired	972
,, Additional Water Closets provided	158
,, Soilpipes removed from inside houses	39
,, Urinals cleansed, repaired, or reconstructed	439

DRAINAGE.

No. of Drains opened and cleansed	3462
,, Drains efficiently trapped	1805
,, Drains in cellars disconnected from the sewer or abolished	44
,, Drains removed from under Dwelling Houses	12
,, Sink Drains disconnected from the sewer	206
,, Sink Bend Pipes repaired or affixed	367
,, Overflow-pipes of Water Cisterns disconnected from the sewer	10
,, Premises supplied with drains	145

OTHER NUISANCES ABATED AND WORK DONE.

No. of Back Yards paved or repaired	484
,, Premises from which fowls have been removed	365
,, Nuisances from swine and swine styes abated	29
,, Accumulations of wash, manure, etc., removed	876
,, Dangerous Premises reported to the City Surveyor's Department, and rendered safe	909
,, Defective Water Fittings reported to the Water Department, and repaired	449

DISINFECTION.

No. of Houses disinfected	1,651
,, Beds and Mattresses disinfected	2,487
,, Sheets, Blankets, and Counterpanes disinfected	4,533
,, Pillows and Bolsters disinfected	4,093
,, Garments disinfected	7,076
,, Carpets disinfected	183
,, other Articles disinfected	1,038

SMOKE NUISANCES.

No. of Observations made by the Inspectors	5,979
,, Manufacturers Reported for breaking the regulations	191
,, ,, Cautioned	131
,, ,, Summoned	59

LODGING HOUSES.

No. of Registered Common Lodging Houses	79
,, Lodgers allowed	2,265
,, Houses Registered as let in lodgings	80
,, Lodgers allowed	457
,, Visits by day	13,068
,, Visits by night	1,342
,, Persons found occupying the Houses	26,902

CANAL BOATS.

No. of Boats registered	31
,, Boats inspected	756
,, Boats properly marked or numbered	13
,, Certificates of registration provided	22
,, Boats provided with means for separating the sexes	8
,, Boats put into habitable condition	3
,, Cases of overcrowding remedied	11
,, Dirty Cabins cleansed	4
, Vessels for drinking water provided	12
,, Unregistered boats discovered	1
,, Boats painted by order	5
,, Boats provided with efficient ventilation	1

WORKSHOPS.

No. of Visits to Workshops	9,537
,, Workshops limewashed	596
,, Workshops fumigated	36
,, Workshops more efficiently ventilated	40
,, Workshops repaired	53
,, Workshops reported as dangerous and made safe	50
,, Additional water closets provided	105
,, Water closets repaired	43
,, Ashpits removed, water closets being provided	28
,, Pan Privies converted into water closets	24
,, Urinals provided or repaired	38
,, Drains repaired or trapped	103
,, Drains removed	7
,, Cases of overcrowding remedied	10
,, Workshops discontinued as dwellings	6
,, Animals removed	7

DAIRIES, COW SHEDS, AND MILKSHOPS.

No. of Visits to Dairies	125
,, Visits to Cow Sheds	1,782
,, Visits to Milk Shops and Milk Stores	5,289
,, Shops, Cellars, and Pantries limewashed	174
,, Lamp Oil, Tripe, Fish, and Vinegar Businesses prohibited	106
,, Dirty Vessels found	5

BAKEHOUSES.

No. of Visits to Bakehouses	1,037
,, Bakehouses limewashed	79
,, Animals removed	1

UNWHOLESOME FOOD.

(Return made by Mr. Edwards, *Superintendent of the Markets.)*

Voluntary Surrenders of Bad Meat	1,221
Seizures of Bad Meat	15
Weight Destroyed	208 tons
Voluntary Surrenders of Bad Fish, &c.	466
Seizures of Bad Fish, etc.	5
Weight destroyed	82 tons
Weight of Bad Fruit, etc., destroyed	12 tons

CONTAGIOUS DISEASES (ANIMALS) ACT.

(Return made by Mr. Edwards, *Superintendent of the Markets.)*

No. of Visits to Slaughter Houses	10,447
,, ,, Railway Stations	1,048
,, ,, Cow Houses	29

TABLE XIII.

Return for the Period 1st July, 1896, to 30th June, 1897, respecting the Vaccination of Children whose Births were Registered in the City during the said period.

	Number of Births returned in the "Birth List Sheets" as Registered.	Number of these Births duly entered in Columns 10, 11, and 13 of the "Vaccination Register" (Birth List Sheets), viz.:				Number of these Births which remained unentered in the "Vaccination Register" on account (as shown by Report Book) of			Number of these Births remaining neither duly entered in the "Vaccination Register" (cols. 3, 4, 5, and 6 of this Return) nor temporarily accounted for in the "Report Book" (cols. 8, 9, and 10 of this Return).
		Col. 10.	Col. 11.		Col. 13.				
		"Successfully Vaccinated."	"Insusceptible of Vaccination."	"Had Smallpox."	"Dead, Unvaccinated."	Postponement by Medical Certificate.	Removal to Districts the Vaccination Officer of which has been duly apprised.	Removal to places unknown or which cannot be reached; and cases not having been found.	
1	2	3		5	6	8	9	10	11
Birmingham Parish ...	8,407	6,461	35	—	1,167	113	61	465	105
Aston Union (within the City)	6,572	4,438	41	—	1,018	130	25	560	360
King's Norton Union (within the City) ...	1,778	1,329	13	—	168	29	12	102	125
Total	16,757	12,228	89	—	2,353	272	98	1,127	590

TABLE XIV.—WATER: RESULTS OF ANALYSES EXPRESSED IN PARTS PER 100,000.

Date of Receipt of Sample.	DESCRIPTION.	Temp. C.	Total Solid Impurity	Organic Carbon.	Organic Nitrogen.	Ammonia	Nitrogen as Nitrates and Nitrites.	Total Combined Nitrogen.	Previous Sewage or Animal Contamination. (Estimated.)	Chlorine.	Hardness.			REMARKS
											Temporary.	Permanent.	Total.	
1897.	**CORPORATION SUPPLY.**													
Jan. 13th	10 Court, Bromsgrove Street ...	4·4	31·8	·420	·050	·000	·20	·250	1,680	1·8	12·0	11·5	23·5	Clear ; pale green
Feb. 13th	Terrace between Nos. 95 and 101, St. Mark's Street	4·4	31·2	·250	·030	·001	·35	·381	3,190	2·4	7·3	12·7	20·0	Clear ; pale green
Mar. 22nd	Exchange Buildings, 106 and 108, Coplow Street	7·2	29·8	·260	·020	·000	·35	·370	3,180	2·0	10·5	10·0	20·5	Very slightly turbid ; pale green
April 13th	Court between 53 and 55, Erskine Street	7·2	28·8	·310	·040	·000	·25	·290	2,180	1·8	10·5	11·0	21·5	Very slightly turbid ; pale green
May 14th	Rear of 51 and 52, Larches Street...	8·9	30·6	·290	·030	·000	·35	·380	3,180	2·5	8·0	12·0	20·0	Ditto
June 11th	Peel Place, Peel Street	14·0	33·2	·290	·030	·001	·35	·381	3,190	2·8	7·5	13·0	20·5	Very slightly turbid ; yellowish green
July 14th	Court between 74 and 75, Coventry Street	18·3	34·0	·280	·040	·001	·15	·191	1,190	2·0	11·5	13·5	25·0	Clear ; pale green
Aug. 12th	6 Court Ryland Road	18·3	34·2	·330	·030	·001	·25	·281	2,190	2·6	6·0	16·0	22·0	Very slightly turbid ; green
Sept. 14th	Between 38 and 40, North Road, Harborne	12·8	34·0	·250	·050	·000	·25	·300	2,180	2·6	7·0	15·0	22·0	Almost clear ; pale green
Oct. 12th	12, York Terrace, Cato Street ...	13·3	32·0	·290	·050	·000	·15	·200	1,180	1·8	7·5	16·0	23·5	Clear ; pale green
Nov. 10th	1 Court, Bath Street	9·4	31·0	·140	·030	·001	·45	·431	4,190	2·8	8·5	12·0	20·5	Ditto
Dec. 9th	19 Court, Grosvenor Street West ...	6·1	33·2	·250	·050	·000	·25	·300	2,180	2·2	10·0	13·5	23·5	Almost clear ; pale green
	Average Results ... 1897...	10·4	32·0	·280	·040	·000	·28	·317	2,480	2·3	8·9	13·0	21·9	
	,, ,, ... 1896...	10·7	32·0	·250	·040	·001	·29	·327	2,550	2·4	9·0	13.0	22·0	
	,, ,, ... 1895...	10·3	31·9	·219	·049	·000	·22	·270	1,890	2·3	9·2	13·7	22·9	
	,, ,, ... 1894...	10·9	30·3	·174	·046	·000	·21	·251	1,820	2·2	7·0	13·1	20·1	
	,, ,, ... 1893...	10·6	30·1	·186	·037	·001	·27	·304	2,350	2·1	7·5	13·2	20·7	

WELL WATERS.

Jan.	11th	†Ward End House, Ward End ...	...	67·0	...	...	·001	2·3	...	23,000	11·1	...	...	25·0	Slightly turbid
,,	12th	21, Calthorpe Road	...	43·0	...	...	·001	2·1	...	21,000	3·4	...	...	21·0	Very slightly turbid : flocculent particles
,,	18th	Simcox Cottages, Northfield Road...	...	18·0	...	...	·000	trace	...	none	1·9	...	...	8·5	Turbid : brown flocculent particles
,,	18th	55, Ravenhurst Road	...	101·0	...	...	·000	6·5	...	65,000	7·0	...	...	40·0	Turbid ; brown flocculent particles
Feb.	15th	†421, 423, and 425, Moseley Road...	...	219·0	...	...	·000	6·8	...	68,000	20·0	...	...	118·0	Almost clear ; green
,,	15th	97 and 99, Blakeland Street ...	...	158·0	...	...	·000	5·2	...	52,000	12·3	...	...	122·0	Almost clear ; pale green
,,	17th	*143, Bromsgrove Street	...	158·0	...	...	·002	4·6	...	46,000	17·7	...	...	91·0	Almost clear ; pale green
,,	18th	May Cottages, Ward End	...	275·0	...	...	·000	18·5	...	185000	14·5	...	...	121·0	Almost clear ; pale green
Mar.	5th	§100, Wenman Street (2nd sample)	...	177·0	...	...	·000	6·1	...	61,000	13·2	...	...	148·0	Very slightly turbid : pale green ; large particles and long floating fibres
,,	27th	28, 30, 32, and 34, Cattell Grove ...	...	146·0	...	...	·002	1·4	...	14,000	14·5	...	...	122·0	Turbid ; brown sediment
April	23rd	The Hollies, Northfield Road ...	...	34·0	...	...	·002	1·1	...	11,000	2·1	...	...	19·0	Very slightly turbid : greenish grey
May	1st	72 and 74, Bristol Road	...	104·0	...	...	·000	2·5	...	25,000	7·0	...	...	80·0	Very slightly turbid
,,	25th	*Lee Bank Square, Lee Bank Road (1st Pump)	...	63·0	...	...	·000	1·8	...	18,000	12·7	...	...	39·0	Very slightly turbid ; pale blue
,,	25th	*Lee Bank Square, Lee Bank Road (2nd Pump)	...	168·0	...	...	·000	9·6	...	96,000	16·5	...	...	81·0	Ditto
July	6th	65 and 67, High Street, Harborne	...	73·0	...	...	·001	4·6	...	46,000	6·9	...	...	37 0	Very slightly turbid : grey
Aug.	18th	73, 4, 5 in front, and 1, 2, 3, and 4 at the back in Edwardes Street	...	159·0	...	...	·000	4·4	...	44,000	16·5	...	...	118·0	Almost clear : blue
,,	18th	133, Sherbourne Road	...	149·0	...	...	·000	5·9	...	59,000	11·6	...	...	115·0	Ditto
,,	23rd	*Back 85, Larches Street	...	156·0	...	...	·034	8·5	...	85,000	11·5	...	...	94·0	Very slightly turbid greenish grey
Oct.	19th	†71 and 72, Upper Cox Street ...	...	136·0	...	...	·840	3·2	...	38,000	13·0	...	...	94·0	Very slightly turbid ; green
,,	22nd	35, 36, 37, and 38, Alfred Street, Sparkbrook	...	155·0	...	...	·000	3·8	...	38,000	8·3	...	...	140·0	Ditto
Nov.	9th	*2, 4, 6, 8, 10, and 12, Harborne Lane	...	63·0	...	...	·001	4·0	...	40,000	6·4	...	...	34·0	Very slightly turbid blue
,,	9th	145, 147, and 149, Metchley Lane	...	47·0	...	...	·004	2·3	...	23,000	4·2	...	...	23·0	Slightly turbid ; grey
,,	10th	*312 and 314, Balsall Heath Road	...	214·0	...	...	·000	7·1	...	71,000	25·1	...	...	164·0	Almost clear ; blue
,,	12th	†27, 29, 31, 33, and 35, and 1-6, at the back, in Dolobran Road ...	...	103·0	...	...	·001	2·7	...	27,000	4·5	...	...	86·0	Clear ; blue
,,	25th	36 and 38, Homer Street	...	198·0	...	...	·000	10·7	...	107000	16·4	...	...	102·0	Almost clear ; green
Dec.	6th	69, High Street, Harborne... ...	...	68·0	...	...	·000	4·4	...	44,000	6·6	...	...	35·0	Almost clear ; blue
,,	11th	32, Clifton Road	...	183·0	...	...	1·100	5·4	...	63,000	18·5	...	...	110·0	Clear ; pale green

* Diphtheria. † Typhoid Fever § Puerperal Fever.

Table of the Number of Deaths occurring in each Street in the City of Birmingham during the Year 1897.

STREETS.	Zymotic Diseases.	Other Diseases.
A		
A B Row		1
Abberley Street		1
Abbey Road		1
Abbey Street	3	9
Abbotsford Road		
Aberdeen Street	1	10
Ada Road		
Adams Street	13	27
Adderley Road	1	20
Adderley Street	5	9
Addison Road	1	1
Adelaide Street	4	5
Albany Road		1
Albert Road		
Albert Street		
Albion Street		5
Alcester Street	6	28
Alder Drive		
Alder Road		3
Alexandra Road		
Alexandra Street		7
Alfred Street	3	5
Algernon Road	1	7
Allcock Street	3	5
Allen's Road		5
Allesley Street	5	13
Allison Street	3	18
Allport Street		
All Saints' Road	1	2
All Saints' Street	1	4
Alma Crescent	2	1
Alma Street		1
Alston Street	2	7
Alum Rock Road		12
Ampton Road		
Anderton Road	1	8
Anderton Street	1	12
Anderton Park Road		
Andover Street		
Angelina Street	9	24
Anthony Road		1
Arden Road	3	7
Argyle Street	5	9
Arley Road		
Armoury Road	3	5
Arsenal Street		2
Arter Street		4
Arthur Road		
Arthur Street	15	28
Artillery Street		5
Ashford Street	1	5
Ashley Street	7	23
Ashted Row		15
Aston Road	6	24
Aston Street	4	5
Aston Brook Street		9
Aston Church Road		4
Asylum Road	1	6
Athole Street		1
Atlas Road	1	3
Auckland Road		4
Augusta Street	1	2
Augustus Road		
Austin Street		5
Avenue Road		
B		
Bacchus Road	2	3
Bagot Street	4	19
Bailey Street		
Baker Street	5	10
Balden Road	2	1
Balfour Street	1	3
Balsall Heath Road	6	29
Banbury Street	1	2
Banks Road		
Barford Road	1	9
Barford Street	17	32
Barker Street	2	4
Barlow's Road		
Barn Street	3	9
Barnsley Road		
Barr Street	4	19
Barrack Street	1	2
Barrows Road		
Bartholomew Row		
Bartholomew Street	2	9
Barwell Road	1	1
Barwick Street		
Baskerville Passage		
Baskerville Place		
Bath Passage		
Bath Row	2	5
Bath Street	2	2
Beach Street	1	8
Beaconsfield Road		
Beak Street		4
Beaufort Road		3
Bedford Road	1	4
Beech Lanes		
Beechfield Road		3
Belcher Lane		1
Belgrave Road		10
Belgrave Street	3	17
Bell Street		
Bell Barn Road	18	29
Bellefield Road		3
Bellis Street	1	5
Belmont Passage	1	1
Belmont Row	1	6
Benacre Street	4	17
Bennett's Hill		2
Benson Road		8
Berkley Street		1
Berners Street	1	3
Berry Street	1	4
Bertram Road		
Betholom Row		
Birchall Street	1	12
Birchwood Road		1
Bird Lane		
Bishop Street	1	14
Bishopsgate Street	6	19
Bissell Street	8	22
Black Pit Lane		
Blake Lane	1	4
Blakeland Street	1	4
Blews Street	3	8
Bloomsbury Street	5	18
Blucher Street	1	17
Blythe Street	2	8
Bolton Road	12	33
Bolton Street		2
Bond Street		
Bordesley Green	6	8
Bordesley Green Road		10
Bordesley Park Road	6	26
Bordesley Street	5	27
Bow Street	1	14
Bowyer Street		
Bowyer Road		2
Bracebridge Street	5	33
Bradford Street	2	22
Braithwaite Road		1
Branston Street		9
Brass Street		3
Brasshouse Passage	1	
Bread Street		2
Brearley Street	20	57
Brewery Street	1	4
Brickiln Street		
Bridge Road		3
Bridge Street		
Bridge Street West	15	27
Brighton Road	2	9
Bristol Road		12
Bristol Street	5	12
Brixham Road		
Broad Street	2	12
Bromford Lane		
Bromsgrove Street	2	10
Brook Road		
Brook Street		
Brookfield Road	3	9
Broom Street		3
Browning Street	4	8
Brueton Street		
Brunswick Road	1	31
Buck Street	2	4
Buckingham Street	2	10
Bull Ring		
Bull Street, Harborne		3
Bull Street, Market Hall		1
Bullock Street	2	5
Burbury Street	8	10
Burlington Passage		
Burlington Road		
Burney Lane		
Butler Street	1	6
Butler Street South		1
Butlin Street		3
Byron Road		5
C		
Calthorpe Road		2
Cambridge Crescent		
Cambridge Street	1	1
Camden Drive	1	2
Camden Grove		1
Camden Street	10	38
Camp Hill	1	6
Camp Street	1	6
Canal Street	1	6
Cannon Street		
Cannon Hill Road		1
Cape Street	1	3
Cardigan Street	1	12
Carlisle Street	2	11
Carlton Road	4	10
Carlyle Road		4
Carnarvon Road		
Caroline Street		2
Carpenter Road		1
Carrington Road	4	6
Carr's Lane		
Cartland Road		2
Carver Street		15
Castle Street		1
Cathcart Street	1	3
Cato Street	1	16
Cato Street North	2	2
Cattell Road	9	19
Cattell Grove		6
Cavendish Road		1
Cecil Street	3	17
Chad Road		
Chandos Road		
Chapel Street	1	1
Chapel House Street		
Chapman Road		1
Charles Road	3	5

STREETS.	Zymotic Diseases.	Other Diseases.
Charles Arthur Street ..	6	14
Charles Henry Street ..	8	33
Charlotte Road ..		4
Charlotte Street ..		3
Chattaway Street ..		6
Cheapside .. .	5	38
Cheatham Street ..		2
Chequers Walk ..	1	3
Cherry Street		
Cherry Wood Road ..	2	13
Chester Street.. ..		4
Chesterton Road ..	1	9
Cheston Road ..		1
Chicheley Street ..		3
Chiswell Road ..	2	7
Christ Church Passage		
Church Lane		
Church Road		2
Church Street.. ..		4
City Road		1
Claremont Road ..		1
Clarence Road ..		2
Clarendon Road ..		2
Clark Street	5	11
Claverdon Street ..	3	11
Claybrook Street ..		1
Clayton Road		
Clement Street ..	1	8
Cleve Terrace ..		
Clevedon Road ..	1	13
Clifton Road	3	25
Clissold Street ..	1	4
Clive Passage.. ..		
Cliveland Street ..	1	2
Clyde Street ..		2
Coleman Street ..	3	11
Coleshill Street ..	4	13
College Road		
College Street		6
Colmore Row		4
Colville Road.. ..	3	9
Commercial Street ..		
Common Lane.. ..		
Communication Row .		1
Congreve Street ..		1
Constance Road ..		
Constitution Hill ..	1	7
Conway Road		
Conybere Street ..	4	20
Cook Street	3	10
Cooksey Road ..	8	30
Cope Street	3	10
Coplow Street ..	5	12
Coralie Street ..		3
Cornwall Street ..		
Coronation Road ..		
Corporation Street ..		2
Cotterill's Lane ..		1
Couchman Road ..	1	4
Court Road		2
Court Oak Road ..		1
Coventry Road ..	5	33
Coventry Street ..	1	6
Cowper Street ..	4	10
Cox Street		4
Cox Street West ..	1	15
Coxwell Road ..		5
Crabtree Road ..	2	5
Cradock Road.. ..		
Cranby Street.. ..		
Cranford Street ..		5
Cranemore Street ..		5
Crawford Street ..		
Cregoe Street	1	15
Crescent		2
Crompton Road ..	1	
Cromwell Passage ..		
Cromwell Street ..	11	46
Crooked Lane		
Crosbie Road		
Cuckoo Road	4	11
Cumberland Street ..		1
Curzon Street		10

STREETS.	Zymotic Diseases.	Other Diseases.
Cuthbert Road ..	2	9
Cyril Road	1	4
D		
Daisy Road		1
Dale End		2
Dalton Street		
Darnley Road ..		
Dart Street		1
Dartmouth Street ..	7	14
Darwin Street ..	9	45
Dawson Street ..		
Dean Street	1	1
Dearman Road	1	3
Defford Road		4
Denbigh Street ..		4
Dennis Road		
Derby Street . ..	3	5
Devon Street	5	22
Devonshire Street ..	1	11
Digbeth	1	10
Digby Street	1	2
Dixon Road		
Doe Street	1	1
Dolman Street ..	2	16
Dolobran Road ..	1	7
Don Street	1	5
Dora Road		
Dorset Road		
Dover Street		
Dr. Johnson Passage ..		
Drayton Road.. ..		2
Drury Lane		1
Dryden Road		
Duchess Road.. ..		2
Duddeston Row ..	2	2
Duddeston Mill Road ..	3	16
Dudley Road	2	22
Dudley Street		
Dugdale Street ..	2	10
Duke Street		9
Dymoke Street ..	6	19
E		
Earl Street		
Eastern Road		
Easy Row		3
Eden Place		
Edgbaston Road ..		
Edgbaston Park Road..		
Edgbaston Street ..		
Edmond Road.. ..		
Edmund Street ..		8
Edward Road		
Edward Street ..	1	7
Edwardes Street ..	2	20
Eldon Road		1
Elkington Street ..		7
Ellen Street		14
Ellis Street	1	2
Elvetham Road ..		1
Emerson Road ..		
Emily Street	4	23
Emmeline Street ..		
Enfield Road		
Erasmus Road ..	1	6
Ernest Street		
Erskine Street.. ..	2	8
Essex Street	6	9
Essington Street ..	2	12
Ethel Road		
Ethel Street		
Eton Road		1
Eva Road	1	4
Eversley Road ..	3	7
Exeter Street		
Eyre Street		1

STREETS	Zymotic Diseases.	Other Diseases.
F		
Factory Road	1	3
Falconer Road ..		
Fallows Road ..	1	1
Farm Road		2
Farm Street	13	58
Farquhar Road ..		
Farquhar Road East ..		
Fawdry Street	1	
Fazeley Street ..	1	5
Fellows Lane		
Fisher Street	2	12
Fleet Street		
Floodgate Street ..	3	15
Florence Street ..	5	7
Ford Street	3	17
Fordrough Lane ..		
Fordroughs		
Fore Street		
Forge Street		
Forster Street.. ..		
Foundry Road ..	2	5
Fowler Street		2
Fox Street		4
Francis Road		
Francis Street ..	4	20
Frank Street		5
Frankfort Street ..	3	13
Franklin Street ..	1	2
Frederick Road ..		5
Frederick Street ..		1
Freeman Road ..	8	2
Freeman Street ..		1
Freeth Street	2	7
Friston Street ..		18
G		
Galton Street	2	2
Garbett Street ..	1	15
Garrison Lane ..	12	40
Garrison Street ..	7	18
Gas Street		
Gate Street		4
Geach Street	2	7
Gee Street	2	5
Gem Street		5
George Road		1
George St., Balsall H'th		3
George Street, St. Paul's		2
George Street West ..	3	16
Gibb Street	2	4
Gillhurst Lane ..		
Gillott Road		6
Gladstone Road ..		8
Glebe Street	4	2
Gloucester Street ..		
Glover Road ..	1	2
Glover Street ..	4	14
Godwin Street.. ..	1	1
Golden Hillock Road ..	1	11
Gooch Street	2	13
Goode Street	2	2
Goodman Street ..		
Goodrick Street ..		4
Gopsall Street ..	1	3
Gordon Road		2
Gordon Street	4	4
Gosta Green	2	2
Gough Road		6
Gough Street	1	8
Grace Road	1	4
Grafton Road		1
Graham Street ..		5
Grange Road	2	13
Grant Street	2	10
Grantham Road ..	1	5
Granville Street ..	1	10

STREETS.	Zymotic Diseases.	Other Diseases.
Gray Street .. .	1	
Gray's Road		
Great Barr Street ..	7	21
Great Brook Street ..	2	19
Great Charles Street ..		3
Great Colmore Street ..	2	29
Great Francis Street ..	7	43
Great Hampton Row ..	5	19
Great Hampton Street..	3	4
Great King Street ..	4	28
Great Lister Street ..	9	20
Great Russell Street ..	12	39
Great Tindal Street ..	1	11
Green Lane .. .	4	23
Green St., Deritend ..		3
Green Street, Saltley ..		2
Greenfield Crescent ..	1	
Greenfield Road ..	1	
Greenway Street ..	8	18
Grosvenor Road ..		2
Grosvenor Row .		
Grosvenor Street ..		1
Grosvenor Street West	8	24
Grove Lane		
Grove Street ..		
Guest Street ..	1	2
Guildford Street ..	4	10
Guthrie Street ..		

H

STREETS.	Zymotic Diseases.	Other Diseases.
Haden Street	2	5
Hadley Street.. ..	3	3
Hagley Road		13
Halberton Street ..		6
Hall Road		2
Hall Street		4
Hampden Street ..		2
Hampton Street ..	2	12
Handsworth New Road		1
Hanley Street ..	1	11
Hanover Street ..		2
Harborne Road ..	1	12
Harborne Park Road ..		4
Harding Street ..		3
Harford Street ..	1	4
Harold Road		
Harrison's Road ..		1
Hart Street		
Hart's Road		
Hatchett Street ..	8	13
Havelock Road ..	3	9
Hawkes Street ..	1	9
Hawthorn Road ..		
Heath Green Road ..	1	7
Heath St., All Saints ..	6	37
Heath St., Balsall H'th	2	5
Heath Street South ..		5
Heath Mill Lane ..	5	9
Henton Street	5	13
Helena Street		
Heneage Street ..	10	45
Henley Street	2	12
Henn's Walk		
Henrietta Street .		
Henry St., Balsall H'h..		1
Henry St., Duddeston..	5	12
Henshaw Road		4
Herbert Road	6	21
Hermitage Road ..		1
Hertford Road ..	1	1
Hick Street	5	6
Hickman Road ..	1	2
Hicks Square	1	
High Street		3
High Street, Bordesley, and Deritend ..	3	32
High St., Harborne ..		8
High St., Saltley ..	1	3
Highfield Rd., Edgb'n..		1
Highfield Rd., Saltley..	1	7
Highgate Place ..		2
Highgate Road ..	2	18
Highgate Square .		
Highgate Street ..	14	28
High Park Street ..	1	9
Hill Street	3	5
Hinckley Street ..		
Hingeston Street .	3	28
Hobmoor Road .		
Hockley Hill	2	6
Hockley Street ..	1	8
Holborn Hill	1	7
Holder Road		
Holland Street ..		2
Holliday Street ..	2	10
Hollier Street	1	4
Holloway Head ..	2	13
Holly Road		3
Holt Street	2	16
Homer Street		3
Hooper Street.. ..		1
Hope Street	6	23
Horse Fair		1
Hospital Street ..	14	56
Howard Street ..	2	4
Howe Street	5	4
Hubert Street ..		1
Hugh Road		3
Humpage Road ..	1	12
Hunter's Road ..	1	1
Hunter's Vale		
Hurst Street		7
Hutton Road	1	
Hutton Street		5
Hyde Road	2	10
Hylton Street		

I

STREETS.	Zymotic Diseases.	Other Diseases.
Icknield Square ..	4	23
Icknield Street ..	4	25
Icknield Port Road ..	8	44
Inge Street	1	6
Ingleby Street ..	2	13
Inkerman Street ..	5	9
Irving Street	13	34
Islington Row.. ..		2
Ivy Lane		2

J

STREETS.	Zymotic Diseases.	Other Diseases.
Jakeman's Road ..		5
Jakeman's Walk ..		4
Jamaica Row		
James Street		
James Turner Street ..	1	10
James Watt Street ..		3
Jenkins street ..	3	2
Jennens Row .. .		1
Jersey Road		4
John Bright Street ..		2
Johnson Street ..		4
Johnstone Street .	3	6

K

STREETS.	Zymotic Diseases.	Other Diseases.
Keeley Street		3
Kendal Road	1	
Kenelm Road	1	
Kent Street	1	11
Kent Street North ..	4	7
Kenyon Street ..	1	4
Key Hill	3	5
King Street		3
King Alfred's Place ..		1
King Edward's Place ..		1
King Edward's Road ..	3	17
Kingscote Road.. ..		
Kingsley Road ..		3
Kingston Road ..	1	8
Kingswood Road ..		2
Knutsford Street ..	1	3
Kyott's Lake Road ..		2
Kyrwick's Lane ..		12

L

STREETS.	Zymotic Diseases.	Other Diseases.
Ladypool Road ..	5	25
Ladywell Passage ..		
Ladywell Walk ..	1	2
Ladywood Road ..		22
Lancaster Street ..		11
Landor Street	1	7
Langley Road ..	1	6
Lansdowne Street ..	1	5
Larches Street ..		14
Latimer Street ..	8	29
Lawden Road ..	3	6
Lawley Street ..	13	26
Lawrence Street .		3
Leach Street	1	
Leamington Road ..	2	7
Lease Lane		1
Ledsam Street ..	5	15
Lee Bank Road .	3	16
Lee Crescent .. .		3
Lee Mount		1
Leek Street		
Lees Street	4	7
Legge Lane		
Legge Street	1	9
Leigh Road		
Leach Street		
Lennox Street ..	4	14
Leonard Street ..		
Leopold Street ..	4	5
Leslie Road		2
Lilly Green		
Lime Grove		
Lingard Street ..	5	13
Link Road		
Lionel Street		8
Lister Street	2	6
Little Ann Street ..	1	1
Little Barr Street ..		5
Little Bow Street ..		1
Little Broom Street ..		
Little Edward Street ..	2	1
Little Francis Street ..		2
Little Green Lane ..	3	29
Little King Street ..	3	18
Little Shadwell Street..		
Liverpool Street ..		
Livery Street		
Lloyd Street		4
Lodge Road	1	19
Lombard Street ..	1	9
Long Acre	11	33
Long Street	2	5
Longbridge Road ..		3
Longmore Street .	1	10
Lonsdale Road ..		3
Lord Street	2	5
Lordswood Road ..	1	3
Louisa Street		
Love Lane		2
Loveday Street ..		3
Lowe Street		3
Lower Dartmouth Street	4	4
Lower Darwin Street ..		
Lower Edwardes Street		1
Lower Essex Street ..	6	17
Lower Fazeley Street ..		6
Lower Hurst Street ..	2	8
Lower Hurst Street East		
Lower Loveday Street..	1	1
Lower Priory ..		
Lower Temple Street ..		
Lower Tower Street ..	1	24
Lower Trinity Street ..	1	9
Loxton Street		2
Ludgate Hill	1	3

STREETS.	Zymotic Diseases	Other Diseases
Ludgate Hill Passage ..		
Lupin Street	1	14
Lyttelton Road ..		
M		
Macdonald Street ..	5	3
Main Street	1	11
Malins Road		
Malthouse Lane ..		7
Malvern Street ..	1	4
Malvern Hill Road ..		2
Manchester Street ..	1	6
Manor Road		
Margaret Road ..		
Margaret Street ..		
Mark Lane		2
Market Street.. ..		2
Marlborough Road ..		
Marroway Street ..	2	5
Marshall Street ..	3	3
Marshall Street South..	1	2
Martineau Street ..		
Mary St., Balsall Heath	7	29
Mary Street, St. Paul's		
Mary Ann Street ..		2
Masshouse Lane ..		1
Maxstoke Street ..		
Meadow Road		
Medlicott Road ..	2	
Melville Road		1
Meriden Street ..	2	8
Metchley Lane ..	1	5
Metchley Park Road ..		1
Metropolitan Road ..		1
Midland Street ..	1	3
Miles Street	4	18
Milk Street	3	3
Mill Lane, Harborne ..		
Mill Lane, St. Martin's	1	1
Mill Lane, Ward End ..		
Mill Street	1	5
Miller Street ..	7	20
Mills Lane		
Milton Street	2	4
Milward Street ..	2	7
Minories		
Moat Lane		
Moat Row		1
Moilliett Street ..	2	11
Moland Street.. ..	2	16
Mole Street	5	9
Mona Road	1	2
Montague Road ..		
Montague Street ..	2	5
Montgomery Street ..	1	6
Montpellier Street ..		
Monument Road ..	11	36
Moor Street	3	3
Moore's Row		
Moorsom Street ..	11	16
Moreton Street ..	1	2
Morville Street ..	3	11
Moseley Road	5	27
Moseley Street ..	6	38
Mostyn Road	1	
Mott Street		10
Mount Pleasant ..		5
Mount Street	1	13
Muntz Street		7
Musgrave Road ..		4
N		
Navigation Street ..		3
Nechells Park Road ..	4	19
Nechells Place ..	2	5
Needham Street .		2
Needless Alley ..		1

STREETS.	Zymotic Diseases	Other Diseases
Nelson Street ..	2	13
New Street		1
New Bartholomew St. ..	1	7
New Bond Street .		5
New Brunswick Road..		
New Canal Street ..	2	9
Newdegate Street ..	1	4
Newhall Hill	1	8
Newhall Street ..	1	20
New John Street ..	12	29
New John Street West..	12	51
New Market Street ..		1
New Meeting Street ..		1
Newport Road ..		
New Spring Street ..	2	10
New Summer Street ..	3	32
Newton Road.. ..		
Newton Street ..		1
Newtown Row ..	8	35
Nile Street		
Nineveh Road.. ..		
Noel Road		1
Norfolk Road		1
Norman Street ..	1	12
Northampton Street ..		2
North Road		4
Northbrook Street ..		4
Northfield Road ..	5	5
Northumberland Street	4	6
North Warwick Street..		
Northwood Street ..	5	12
Norton St., All Saints	1	10
Norton St., Balsall H'th		4
Norwood Road ..	1	1
Nova Scotia Street ..	2	5
Nursery Road.. ..		
O		
Oakfield Road ..		6
Oakley Road	1	1
Old Square		
Old Church Road ..		
Old Cross Street ..		2
Oldfield Road	3	19
Old Meeting Street ..		1
Oliver Road		2
Oliver Street .. .		5
Ombersley Road ..		7
Oozells Street		3
Oozells Street North ..	2	1
Orchard Road.. ..		2
Orford Road	1	
Ormond Street ..	3	8
Osborn Road .. .	2	2
Osler Street	7	15
Oughton Place ..		1
Outlet Road		
Owen Street	3	8
Oxford Street	1	3
Oxygen Street.. ..		1
P		
Paddington Street ..		7
Paignton Road ..		1
Pakenham Road ..	2	3
Palace Road		
Palmer Street		1
Palmerston Road ..		1
Parade	1	2
Paradise Street ..		
Park Hill Road ..		1
Parkfield Road ..		
Park Lane		4
Park Road, All Saints	9	34
Park Road, Saltley ..		7
Park Street	2	4
Parker Street		6
Parliament Street ..	4	9
Paternoster Row ..		

STREETS.	Zymotic Diseases	Other Diseases
Paxton Road	2	5
Pebble Mill Road ..		
Peel Street	1	7
Pemberton Street ..		2
Pembroke Road ..		
Penn Street, Deritend ..		5
Penn Street, Duddeston	3	6
Perrot Street.. ..		4
Pershore Road .	2	13
Pershore Street ..	1	16
Phillimore Road ..		1
Phillip Street .		
Pickford Street ..	5	3
Piddock Street ..	1	
Pigott Street		7
Pinfold Street		
Pitney Street		
Pitsford Street ..		2
Pitt Street		
Plough & Harrow Road		2
Plume Street		
Pope Street	3	12
Poplar Avenue ..		
Poplar Road	2	4
Porchester Street ..		1
Porthope Road ..	1	3
Portland Road ..		1
Potter Street		2
Powell Road		1
Powell Street	3	2
Prescott Street ..	3	11
Price Street	1	6
Priestley Road ..		1
Prince Albert Street ..	1	3
Prince Arthur Road ..		11
Princes Row		4
Princes Street.. ..		1
Princess Road.. ..		4
Princess Street ..		2
Princip Street		13
Priory Road, B'lsll H'th		
Priory Road, Edgbaston		1
Pritchatt's Road ..		
Pritchett Street ..	3	23
Proctor Street		7
Prospect Row		3
Q		
Queen Street	1	7
R		
Radnor Street.. ..	2	6
Raglan Road		
Railway Ter., Duddeston	1	3
Railway Ter., Nechells..	5	7
Ralph Road		
Raun Street		6
Ravenhurst Road ..		1
Ravenhurst Street ..	1	9
Raymond Road ..		
Rawlins Street ..	2	5
Rea Street	2	19
Rea Street South ..		4
Regent Parade ..		
Regent Place	1	2
Regent Road	1	1
Regent Row		
Regent Street		
Regent Park Road ..	2	5
Reginald Road ..		8
Reservoir Retreat ..		
Reservoir Road ..	1	5
Richard Street ..	4	13
Richmond Hill Road ..		3
Ridley Street .. .	1	3
River St., Balsall Heath	1	1
River St., St. Barthol'w's		5
Robert Road	2	1
Rocky Lane	1	8

STREETS.	Zymotic Diseases.	Other Diseases.
Rodway Street	1	1
Rosalie Street ..		1
Rose Road ..		
Rosebery Street	2	12
Roshven Road	1	2
Rotton Park Road	2	2
Rotton Park Street		1
Rowland Street		1
Rupert Street ..	3	13
Ruston Street ..	2	8
Ruston Street North	6	20
Rutland Road ..		1
Ryder Street ..		7
Ryland Road ..	1	6
Ryland Street ..		9
S		
Salop Street ..		4
Saltley Road	4	23
Saltley Street ..	3	1
Sampson Road		7
Sampson Road North	2	2
Sand Pits ..		3
Sand Street ..		
Sandon Road ..		5
Sandy Lane ..		12
Sarah Street ..		
St. Andrew's Road	13	26
St. Augustine's Road		
St. Clement's Road	2	4
St. George's Place		3
St. George's Street	4	15
St. James' Place		4
St. James' Road		
St. James' Street	2	2
St. John's Rd., B'll H'th	1	4
St. John's Rd., H'borne		2
St. Luke's Road	3	11
St. Mark's Street	1	14
St. Martin's Lane		
St. Martin's Place		
St. Martin's Row		1
St. Martin's Street	1	7
St. Mary's Road		
St. Mary's Row		2
St. Mary's Street	1	2
St. Oswald's Road		2
St. Paul's Road		13
St. Paul's Square		1
St. Peter's Place		
St. Peter's Road		3
St. Philip's Place		
St. Saviour's Road	1	14
St. Stephen's Street		1
St. Vincent Street	5	15
Scholefield Street	3	16
Scotland Street	1	1
Scott Street ..		1
Sefton Road ..		1
Selwyn Road ..		
Serpentine Road	2	2
Severn Street ...	1	4
Seymour St., B'sall H'th		2
Seymour St., St. Barth.		
Shadwell Street		3
Shakespeare Road	4	16
Sheep Street ..	2	7
Sheepcote Lane		2
Sheepcote Street	6	9
Shefford Road		3
Shenstone Road		2
Sherborne Street	7	20
Sherbourne Road	5	19
Sherlock Street	14	29
Sir Harry's Road		1
Skinner Lane	3	6
Skinner Street	1	2
Sladefield Lane		
Slaney Street ..		2
Sloane Street ..	1	5
Slough Lane ..		
Smallbrook Street	2	1
Smith Street, St. George's	4	14
Smith Street, Duddeston	1	3
Smithfield Passage		2
Smithfield Street		
Snow Hill ..		5
Somerset Road		4
Somerset Street	3	2
Somerville Road		
South Road ..	1	7
South Street ..	2	2
Spark Street ..		8
Speaking Stile Walk	1	1
Speedwell Road		
Spencer Street	1	3
Spiceal Street ..		
Spon Terrace ..		
Spooner Street	2	1
Spring Hill ..	3	15
Spring Hill Passage	1	1
Spring Road ..		2
Spring Street ..		4
Spring Vale ..	2	
Springfield Street	3	15
Stafford Street		1
Stanhope Street	3	7
Staniforth Street	1	8
Stanley Road ...		5
Stanmore Road		3
Station Road, Harborne		2
Station Road, Rotton Pk		1
Station Street ..		1
Stechford Lane		
Steelhouse Lane		1
Stella Street ...	1	9
Stephenson Place		
Stephenson Street		
Steward Street	3	11
Stirling Road		1
Stoke Street ..	1	15
Stone Yard ..		
Stoney Lane ..		6
Stour Street ..	3	18
Stratford Place		5
Stratford Road	4	7
Stratford Street		2
Strensham Road		
Stuart Street ..	1	4
Suffolk Street ..	1	10
Summer Lane ..	4	42
Summer Road ...	2	12
Summer Row ..		
Summer Street		
Summerfield Crescent	1	4
Summerfield Road		
Summer Hill Road	2	5
Summer Hill Street	4	7
Summer Hill Terrace		2
Somerville Road	1	5
Sun Street ..	4	11
Sun Street West	1	2
Sutton Street ..		4
Swallow Street		1
Sydenham Road	2	12
Sydney Road ..		3
T		
Talbot Street ..	2	8
Talfourd Street	3	13
Taunton Road ..	1	1
Taylor Street ..	2	2
Temple Row ..		
Temple Row West		
Temple Street ..		
Templefield Street	2	2
Tenby Street ..		2
Tenby Street North		1
Tennal Lane ..		
Tennal Road ..	2	1
Tennant Street	3	28
Tennyson Road		2
Theodore Street		6
Theresa Road ..		2
Thimble Mill Lane	2	6
Thomas St., B'sall H'th		4
Thomas St., Deritend ..		3
Thorp Street ..	1	2
Tillingham Street		4
Tilton Road ..	12	20
Tindal Street ..		4
Tower Street ..	6	23
Trafalgar Road		
Treaford Lane		
Trent Street ..	1	4
Trevor Street ..	2	14
Trinity Terrace		1
Tudor Street ..	4	12
Turk's Lane ..		
Turner Street ..		13
Twyning Road		
U	13	
Unett Street		15
Union Passage		
Union Street ..	3	
Union Terrace		
Upper Cox Street		8
Upper Dean Street	7	
Upper Gough Street	3	13
Upper Highgate Street		6
Upper Marshall Street ..		3
Upper Mill Lane	3	
Upper Priory ..	3	
Upper Ryland Road		9
Upper Trinity Street		10
V		
Varna Road ..	1	3
Vaughton Street	3	14
Vaughton Street South		5
Vauxhall Grove		1
Vauxhall Road	4	19
Vauxhall Street		3
Venetia Road ..		
Ventnor Road ..	2	1
Vere Street ..	4	6
Vernon Road ..		
Vesey Street ..		
Viaduct Street ..		
Vicarage Rd., Edgbaston		1
Vicarage Rd, H'borne ..		
Victoria Grove	2	3
Victoria Road		
Victoria St., B'sall H'th	1	7
Victoria St., Bordesley	2	7
Villa Street ..	4	2
Villiers Street ..	1	3
Vincent Crescent		5
Vincent Parade	1	9
Vincent Street	3	10
Vine Street ..		1
Vittoria Street .		3
Vivian Road ..	1	4
Vyse Street		3

W

STREETS.	Zymotic Diseases.	Other Diseases.
Walford Road	1	3
Walter Street	1	8
Ward End		1
Ward Street	1	9
Warner Street		2
Warren Road	1	
Warstone Lane	4	12
Warstone Parade East		1
Warwick Street	2	13
Washington Street	1	5
Washwood Heath Road	3	14
Water Street	1	3
Waterloo Street		
Waterworks Road	1	6
Watery Lane	11	33
Watts Road		1
Waverley Road		2
Weaman Row		
Weaman Street	1	18
Well Lane		
Well Street	5	18
Wellesley Street	2	10
Wellington Rd., Edg'ton		2
Wellington Rd., H'borne	1	
Wellington Street	2	9
Wenman Street		16
Westbourne Road		
Western Road		1
Westfield Road		
Westley Street	3	6
Weston Street		2
Wharf Lane		
Wharf Street	4	5
Wharton Street	1	3
Wheeler Street	9	19
Wheeley's Lane	1	2
Wheeley's Road		1
Whitby Road		3
White Road	1	8
White Lion Passage		
White Street		1
Whitehall Road	2	8
Whitmore Road	1	4
Whitmore Street	4	9
Whittall Street	1	4
Wiggin Street	1	3
William Street, Deritend		5
William St., St. Thomas's	17	25
William Street, Saltley	1	3
William Street North	1	4
William Edward Street	1	6
William Henry Street	1	2
Willis Street	2	18
Willows Avenue		
Willows Crescent		1
Willows Road		4
Wilton Street	3	3
Windmill Street		3
Windsor Street	9	30
Winson Green Road	2	14
Winson Street	1	19
Witton Street	4	9
Wolseley Street	5	11
Wood Lane		
Wood Street		1
Woodbourne Road		1
Woodcock Street		9
Woodfield Road	1	3
Woodville Road		
Worcester Street		
Wordsworth Road		2
Wrentham Street	3	7
Wright Road		6
Wright Street	1	6
Wrottesley Street		1
Wyndcliffe Road	1	2
Wyndham Road		4
Wynn Street	3	17

X

Y

STREETS.	Zymotic Diseases.	Other Diseases.
Yardley Road		3
Yateley Road		
Yew Tree Road		
York Passage		
York Road		1
York Street, Harborne		
York Street, St. Mary's		1

Z

AT INSTITUTIONS.

STREETS.	Zymotic Diseases.	Other Diseases.
Children's Hospital	31	58
Queen's Hospital	17	152
General Hospital	19	348
City Hospital	77	
Workhouse	22	658
City Asylum		86
St. Joseph's Home		19
Gaol		3
Eye Hospital		
Blind Institution		
Homœopathic Hospital		7
Orthopædic Hospital		1

ADDENDA.

STREETS.	Zymotic Diseases.	Other Diseases.
Canals		20
Railways		6
Not located		12
TOTALS	1909	8759

Grand Total 10668

REPORT

ON

ADULTERATION.

City Analyst's Laboratory,

The Council House, Birmingham,

March 4th, 1898.

To the Health Committee.

Mr. Chairman and Gentlemen,

I beg to report that during the year 1897 I received for analysis 1145 samples of food, drink, and drugs. Two of them were received from private purchasers, forty-eight were purchased by Mr. Parker, Inspector of Nuisances, and the remainder by Mr. Jones, the Food and Drug Inspector under the Acts.

In the following table the samples analysed under the Food and Drugs Acts are divided into three classes, and the amount of adulteration in each class is shown; the number of samples taken under the Margarine Act is also given.

Table A.—Total Samples.

	Number Analysed.	Number Adulterated.	Percentage of Adulteration.
Samples of Food	979	240*	25*
Samples of Drink	38	6	16
Samples of Drugs	108	20	19
Samples under the Food and Drugs Act	1125	266	24
Samples under the Margarine Act ...	20	...	...
Total Samples	1145		

* In 119 samples, or 11 per cent., boric acid and formic aldehyde were the only adulterants present.

In order that the amount of adulteration in Birmingham last year may be compared with previous years and with that occurring in other districts, several tables in this Report give the percentage of adulteration in Birmingham, in England and Wales as a whole, and in the district now under the control of the London County Council for the last twenty-five years.

Comparative figures for several years cannot be given, as the Local Government Board Report for 1897 is not yet published, and as the reports of public analysts were not summarised before 1876.

TABLE B.—TOTAL SAMPLES.

YEARS.	BIRMINGHAM.		LONDON.	ENGLAND AND WALES.
	Samples per Annum.	Percentage of Adulteration.	Percentage of Adulteration.	Percentage of Adulteration.
1873-76	83	47	12*	18*
1877-81	175	25	13	16
1882-86	616	16	14	14
1887-91	836	13	14	12
1892-96	1074	12	14	11
1892	969	14	17	12
1893	1004	13	17	13
1894	1129	11	14	10
1895	1131	11	13	9
1896	1138	19‡	12	9
1897	1145	24§	†	†

* 1876 only. † Not yet available.
‡ 11 per cent. if foods adulterated with preservatives only are excluded.
§ 13 per cent. if foods adulterated with preservatives only are excluded.

The above table shows that as a rule the percentage of adulteration in Birmingham is rather higher than that of England and Wales as a whole, and rather lower than that of London. During the last two years, owing to the action of your Committee, I have examined a number of samples of food for preservatives, and have classified those in which they have been found as adulterated. If the samples adulterated with preservatives only be excluded, the percentages of adulteration for 1896 and 1897—viz., 11 per cent. and 13 per cent., are very similar to those of previous years.

Outside Birmingham very little action had been taken to prevent the adulteration of articles of food with preservatives, and therefore the lower figures for the percentages of adulteration in Birmingham must be used for comparison with those for London and England and Wales.

It is perhaps necessary to point out that the comparison of these figures must not be pressed too far, because the articles examined, and therefore the percentages of adulteration, vary in different years and in different localities, and that the detection of a new form of adulteration may cause a large number of samples of that particular article to be examined. For instance, during 1896, there were a number of prosecutions here for paraffin in sugar confectionery, but none for glycerine sugar, or cocoa, whilst last year the conditions were reversed.

1.—SAMPLES OF FOOD AND DRINK.

The following table gives a list of the samples of food and drink taken under the provisions of the Food and Drugs Acts, and shows the number of each article found to be adulterated. The corresponding list of drugs is given in table K.

TABLE C.—SAMPLES OF FOOD AND DRINK.

	No. of Samples Analysed.	No. found to be Genuine.	No. found to be Adulterated.
Milk	399	317	82*
Butter	281	162	119†
Coffee	142	121	21
Flour	29	29	0
Bread	22	22	0
White Pepper	21	21	0
Root Ginger	20	19	1
Beer	13	11	2
Cocoa	13	0	13
Granulated Sugar	11	10	1
Demerara Sugar	9	9	0
Scotch Whiskey	9	7	2
Irish Whiskey	9	8	1
Vinegar	8	8	0
Sago	6	6	0
Ground Ginger	6	6	0
Gin	6	6	0
Oatmeal	5	5	0
Cheese	4	2	2
Pork Pie	1	1	0
Sausage	1	1	0
Polony	1	1	0
Ale	1	0	1
	1017	772	245‡

* Boric acid and formic aldehyde were the only adulterants present in 27 samples.
† Boric acid was the only adulterant present in 92 samples.
‡ Boric acid and formic aldehyde were the only adulterants present in 119 samples.

MILK.

Out of the 399 samples examined, 82, or 21 per cent., were certified to be adulterated ; 55, or 14 per cent., contained added water or skimmed milk, and 27, or 7 per cent., were adulterated with preservatives. Besides these, 76 samples, or 19 per cent. more, were low in quality, containing less than 12 per cent. of solid matter. The average composition of the 399 samples of milk examined during the year was 12·2 per cent. of solid matter, of which 3·7 per cent. was fat ; as in this calculation even the largely-adulterated milks are included, it will be seen that there is nothing unreasonable in considering samples containing less than 12 per cent. of solid matter to be low in quality or adulterated.

Twenty-two samples of milk were adulterated with water, twenty samples were deficient of part of their fat, and thirteen others contained both too much water and too little fat. Nine samples had been artificially coloured, seven of them being either low in quality or adulterated.

All the samples last year were examined for the presence of preservatives. In twenty-two cases boric acid was found in quantities varying from five to seventy-five grains per gallon. The vendor of the last sample (No. 1117) was prosecuted and fined, fourteen vendors were cautioned, the remaining seven samples contained water in excess, or skimmed milk in addition to the boric acid, and the vendors were either prosecuted or fined. In the previous year boric acid was detected in thirty samples of milk.

Formic aldehyde, a comparatively new form of preservative, was present in thirteen samples of milk. In three cases the vendor was cautioned, in the other ten cases no action was taken. Although only a very small proportion of formic aldehyde is added to milk as a preservative, I consider its addition to be an adulteration, because it is a substance which has not been proved to be free from injury to the health of the consumer, and which, moreover, being foreign to milk, renders it, in the words of the Food and Drugs Act, "not of the nature, substance, and quality of the article demanded." When milk is asked for by a purchaser, milk free from preservatives is required, and a vendor has no right to supply an article containing them unless the consumer is informed of their presence.

It might be expected that the use of preservatives would be confined to the warm summer months, when milk is more prone to decomposition; the following list, however, shows that boric acid or formic aldehyde was detected in five milks bought in October, in three bought in November, and in four bought in December. Probably, therefore, if the addition of preservatives were legalised, they would be commonly employed for milk, not merely in the warm weather but all the year round.

Twenty-seven vendors of adulterated milks were cautioned by the Health Sub-Committee, thirty-eight were prosecuted and fined, while in five other cases the vendors were only ordered to pay the costs of the prosecution; in two cases wholesale dealers were fined £10 and costs. The average of the fines was £1 10s. 8d.; last year the average fine was £1 13s. 0d.

NO.	DATE.	ADULTERATION.	ACTION.
68	Jan. 21st	Water in excess 4% and fat deficient 18%; coloured	Fined 5s. and 9s. costs.
73	" 21st	Water in excess 4%	Cautioned.
75	" 21st	Water in excess 9% and fat deficient 11%	Fined £2 and 8s. costs.
113	Feb. 4th	Fat deficient 37%	Fined 2s. 6d. and 8s. costs
115	" 4th	Fat deficient 37%	Fined 2s. 6d. and 8s. costs
119	" 23rd	Water in excess 5%	Cautioned.
250	Mar. 18th	Fat deficient 30%	Fined £1 and 8s. costs.
251	" 18th	Water in excess 6% and fat deficient 15%; coloured	Fined £2 and 8s. costs.
310	April 1st	Boric acid 30 grains per gallon	Cautioned.
314	" 7th	Water in excess 25%	Fined 10s. and 8s. costs.
316	" 7th	Water in excess 5% and fat deficient 15%	Fined 10s. and 8s. costs.
318	" 7th	Water in excess 14%	Fined 1s. and 9s. costs.
323	" 7th	Fat deficient 21%	Fined 10s. and 9s. costs.
336	" 13th	Water in excess 8%	Cautioned.
341	" 13th	Water in excess 8% and fat deficient 12%	Fined £1 and 9s. costs.
342	" 13th	Fat deficient 26%	Fined £1 and 8s. costs.
344	" 13th	Water in excess 9% and fat deficient 13%	Fined £1 and 8s. costs.
376	" 28th	Water in excess 7% and fat deficient 10%	Ordered to pay costs, amounting to 5s.
377	" 28th	Fat deficient 17%, formic aldehyde	Cautioned.

NO.	DATE.	ADULTERATION.	ACTION.
467	May 27th	Water in excess 8%	Cautioned.
468	" 27th	Boric acid 30 grains per gallon	Cautioned.
473	" 27th	Fat deficient 28%	Fined £3 and 12s. costs.
474	" 27th	Fat deficient 22%	Fined £5 and 18s. costs.
503	June 2nd	Formic aldehyde	Cautioned.
504	" 2nd	Boric acid 40 grains per gallon	Cautioned.
506	" 2nd	Formic aldehyde	Cautioned.
551	" 29th	Boric acid 20 grains per gallon	Cautioned.
552	" 29th	Fat deficient 28%, boric acid 40 grains per gallon	Fined 10s. and 8s. costs.
554	" 29th	Formic aldehyde	No action.
555	" 30th	*Water in excess 11%	Fined 10s. and 8s. costs.
557	" 30th	Formic aldehyde	No action.
558	" 30th	Formic aldehyde	No action.
560	" 30th	Formic aldehyde	No action.
606	July 8th	Boric acid 10 grains per gallon	Cautioned.
621	" 15th	Boric acid 50 grains per gallon	Cautioned.
623	" 15th	Water in excess 7%, boric acid 10 grains per gallon	Cautioned.
624	" 15th	Boric acid 40 grains per gallon	Cautioned.
654	" 20th	Water in excess 13%	Fined 10s. and 8s. costs.
659	" 20th	Water in excess 5%	Cautioned.
660	" 20th	Water in excess 4% and fat deficient 14%	Fined 10s. and 8s. costs.
703	Sep. 14th	Formic aldehyde	No action.
704	" 14th	Water in excess 4% and fat deficient 14%	Cautioned.
705	" 14th	Formic aldehyde	No action.
706	" 14th	Water in excess 4% and fat deficient 23%; boric acid 50 grains per gallon	Fined 5s. and 8s. costs.
707	" 14th	Water in excess 27%	Fined 10s. and 8s. costs.
710	" 14th	Fat deficient 28%	Prosecution withdrawn, defendant being a chronic invalid.
711	" 14th	Fat deficient 36%	Fined 5s. and 8s. costs.
720	" 21st	Formic aldehyde	No action.
749	" 27th	Water in excess 14%, boric acid 20 grains per gallon	Fined £10 and 19s. costs.
750	" 27th	Water in excess 19%, boric acid 60 grains per gallon	Fined 10s. and 8s. costs.
751	" 27th	Water in excess 18% and fat deficient 12%; boric acid 40 grains per gallon	Fined 10s. and 8s. costs.
764	Oct. 4th	Water in excess 13%	Fined £2 and 8s. costs.
765	" 4th	Water in excess 12% and fat deficient 11%	Fined £2 and 8s. costs.
768	" 4th	Boric acid 30 grains per gallon	Cautioned.
771	" 4th	Fat deficient 26%	Ordered to pay costs, amounting to 6s.
775	" 4th	Boric acid 30 grains per gallon	Cautioned.

* This sample was sold as "skimmed milk."

NO.	DATE.	ADULTERATION.	ACTION.
804—	,, 14th	Water in excess 10%	Fined £5 and 8s. costs.
805—	,, 14th	Water in excess 16%, coloured	Ordered to pay 1s. costs.
807—	,, 14th	Water in excess 5%	Cautioned.
812—	, 14th	Water in excess 5%	Cautioned.
848—	,, 20th	Formic aldehyde	No action.
854—	,, 20th	Boric acid 15 grains per gallon	Cautioned.
855—	,, 21st	Water in excess 25%	Fined £10 and 17s. costs.
860—	,, 21st	Fat deficient 34%	Fined £2 and 8s. costs.
880—	,, 28th	Boric acid 55 grains per gallon	Cautioned.
940—	Nov.10th	Formic aldehyde	No action.
942—	,, 10th	Formic aldehyde	No action.
949—	,, 10th	Fat deficient 20%	Ordered to pay costs, amounting to 4s.
961—	,, 17th	Fat deficient 24%	Fined £1 and 12s. 6d. costs.
962—	,, 18th	Fat deficient 22%	Fined £1 and 12s. 6d. costs.
968—	,, 18th	Water in excess 9%, boric acid 10 grains per gallon	Cautioned.
987—	,, 24th	Fat deficient 30%	Fined £1 and 9s. costs.
990—	,, 24th	Water in excess 28%	Fined 5s. and 8s. costs.
991—	,, 24th	Fat deficient 23%	Fined £1 and 8s. costs.
1013—	Dec.6th	Boric acid 10 grains per gallon	Cautioned.
1116—	,, 23rd	Fat deficient 44%	Fined 5s. and 8s. costs.
1117—	,, 23rd	Boric acid 75 grains per gallon	Fined 5s. and 9s. costs.
1121—	,, 23rd	Fat deficient 25%	Fined 10s. and 9s. costs.
1122—	,, 23rd	Water in excess 11%	Ordered to pay costs, amounting to 5s.
1125—	,, 29th	Water in excess 9% and fat deficient 17%	No action, owing to an error in marking the sample.
1133—	,, 29th	Boric acid 5 grains per gallon	Cautioned.
1137—	,, 30th	Boric acid 5 grains per gallon	Cautioned.

TABLE D.—MILK.

YEARS.	BIRMINGHAM.		LONDON.	ENGLAND AND WALES.
	Samples per Annum.	Percentage of Adulteration.	Percentage of Adulteration.	Percentage of Adulteration.
1873-76	28	54	*	*
1877-81	56	54	25	21
1882-86	184	31	23	17
1887-91	206	19	22	13
1892-96	354	17	21	12
1892	308	19	23	13
1893	327	19	26	15
1894	340	10	21	12
1895	325	18	19	11
1896	470	19†	18	11
1897	399	21†	*	*

* Not available.

† 14 per cent. if milks adulterated with preservatives only are excluded.

The above table shows that the percentage of adulteration in Birmingham last year was slightly higher than in the previous year; in 1897, however, milks containing formic aldehyde were for the first time detected and reported as adulterated. Apart from preservatives, the same proportion of milks, *viz.*, 14 per cent., was found to be adulterated in 1896 and 1897, these years being rather lower than 1895, when 18 per cent. of the milks analysed were adulterated. I must again point out that in some districts milks containing boric acid and formic aldehyde are not reported as adulterated, and, therefore, that the figures for London and for England and Wales for 1896 are somewhat too low for accurate comparison with Birmingham. Probably there is more adulteration in our City than in England and Wales as a whole, but rather less than in London.

BUTTER.

Of the 281 samples of butter examined, 27, or 10 per cent. were adulterated with foreign fat; in 24 cases boric acid was also present. Of the remaining 254 samples, 92, or 36 per cent. were adulterated with boric acid; no action was taken with regard to these butters. Samples taken under the Margarine Act are referred to later on in the report.

In order to ascertain if butter could be kept by means of cold, a sample free from boric acid was put in a Linde refrigerator for two months, when examined at the close of that time it was found to be in a perfectly sweet condition, and on analysis it yielded normal results.

Twenty-seven vendors were fined for selling adulterated butter, the average amount of the fines being £2 7s. 7d., in the previous year the average was £2 9s. 6d.

The following list gives particulars of the butters adulterated with foreign fat and of the action taken with regard to them :—

NO.	DATE.	ADULTERATION.	ACTION.
41	Jan. 19th	Foreign fat 80%, boric acid	Fined £2 and 8s. costs.
44	" 19th	Foreign fat 75%, boric acid	Fined £2 and 8s. costs.
56	" 21st	Foreign fat 75%, boric acid	Fined £2 and 9s. costs.
131	Feb. 12th	Foreign fat 80%, boric acid	Fined £2 and 8s. costs.
156	" 16th	Foreign fat 90%, boric acid	Fined £2 and 8s. costs.
183	" 22nd	Foreign fat 80%, boric acid	Fined £2 and 8s. costs.
184	" 22nd	Foreign fat 85%, boric acid	Fined £2 and 8s. costs.
212	Mar. 8th	Foreign fat 55%, boric acid	Fined 10s. and 8s. costs.
222	" 8th	Foreign fat 90%, boric acid	Fined £5 and 9s. costs.
287	" 27th	Foreign fat 85%, boric acid	Fined 10s. and 9s. costs.
335	Apr. 9th	Foreign fat 95%	Fined £5 and 10s. costs.
588	July 6th	Foreign fat 100%, boric acid	Fined £5 and 9s. costs.
701	Sep. 13th	Foreign fat 100%, boric acid	Fined £5 and 16s. costs.
745	,, 25th	Foreign fat 65%, boric acid	Fined £2 and 9s. costs.
786	Oct. 7th	Foreign fat 100%, boric acid	Fined 10s. and 13s. costs.
788	,, 7th	Foreign fat 70%, boric acid	Fined £5 and 11s. costs.
794	,, 7th	Foreign fat 80%	Fined £5 and 9s. costs.
816	,, 16th	Foreign fat 85%, boric acid	Fined £3 and 10s. costs.
825	,, 16th	Foreign fat 80%, boric acid	Fined £2 and 10s. costs.
835	,, 19th	Foreign fat 70%, boric acid	Fined £5 and 9s. costs.
909	Nov. 4th	Foreign fat 80%, boric acid	Fined £2 and 9s. costs.

NO.	DATE.	ADULTERATION.	ACTION.
933—	,, 10th	Foreign fat 75%, boric acid	Fined £2 and 10s. costs.
939—	,, 10th	Foreign fat 65%, boric acid	Fined £5 and 9s. costs.
1014—	Dec. 7th	Foreign fat 45%, boric acid	Fined £3 and 9s. costs.
1042—	,, 8th	Foreign fat 60%	Fined £2 and 9s. costs.
1060—	,, 14th	Foreign fat 75%, boric acid	Fined £5 and 9s. costs.
1106—	,, 22nd	Foreign fat 65%, boric acid	Fined 5s. and 9s. costs.

TABLE E.—SAMPLES OF BUTTER UNDER THE FOOD AND DRUGS ACTS.

YEARS.	BIRMINGHAM.		LONDON.	ENGLAND AND WALES.
	Samples per Annum.	Percentage of Adulteration.	Percentage of Adulteration.	Percentage of Adulteration.
1873-81	4	17	16*	14*
1882-86	31	35	18	18
1887-91	73	26	16	13
1892-96	187	17	16	11
1892	119	17	26	15
1893	146	11	21	14
1894	228	14	15	10
1895	203	14	12	8
1896	238	26‡	12	9
1897	281	43§	†	†

* 1877-81 only.
† Not yet available.
‡ 9 per cent. if butters adulterated with boric acid in the second half of the year are excluded.
§ 10 per cent. if butters adulterated with boric acid are excluded.

Last year 10 per cent. of the samples analysed in Birmingham were adulterated with foreign fat; this proportion, though slightly higher than that of the previous year, is below the average, probably owing to a larger number of samples being taken under the Margarine Act for not being properly labelled. In London and England and Wales as a whole, very few samples have been condemned because of the presence of boric acid, and therefore the percentage of adulteration in Birmingham for the last two years appears comparatively very high.

COFFEE.

Twenty-one of the 142 samples examined, or 15 per cent. were adulterated with chicory, though in three cases the amount of adulteration was not more than 10 per cent. Below is given a list of the adulterated samples and the action taken with regard to them and also a table which shows that the percentage of adulteration of coffee in Birmingham last year was unusually high as compared with previous years or with London or England and Wales.

NO.	DATE.	ADULTERATION.	ACTION.
46	Jan. 19th	Chicory 40%	Fined £1 and 9s. costs.
85	„ 29th	Chicory 60%	Fined £2 and 8s. costs.
88	„ 29th	Chicory 50%	Fined £3 and 8s. costs.
130	Feb. 12th	Chicory 60%	Fined £1 and 8s. costs.
144	„ 12th	Chicory 35%	Fined £1 and 8s. costs.
157	„ 16th	Chicory 75%	Fined £1 and 8s. costs.
213	Mar. 8th	Chicory 75%	Fined 10s. and 8s. costs.
244	„ 16th	Chicory 70%	Fined £2 and 8s. costs.
281	„ 27th	Chicory 70%	Fined 5s. and 9s. costs.
357	April 23rd	Chicory 5%	Cautioned.
359	„ 23rd	Chicory 10%	Cautioned.
457	May 12th	Chicory 5%	Cautioned.
460	„ 12th	Chicory 45%	Fined £1 and 9s. costs.
538	June 17th	Chicory 55%	Fined £2 and 9s. costs.
730	Sep. 23rd	Chicory 35%	Fined £2 and 9s. costs.
734	„ 23rd	Chicory 75%	Fined £2 and 9s. costs.
823	Oct. 16th	Chicory 50%	Fined £1 and 9s. costs.
910	Nov. 4th	Chicory 50%	Fined £2 and 9s. costs.
929	„ 9th	Chicory 70%	Fined £2 and 9s. costs.
1040	Dec. 8th	Chicory 45%	Fined £2 and 9s. costs.
1070	„ 16th	Chicory 75%	Fined £4 and 9s. costs.

TABLE F.—COFFEE.

YEARS	BIRMINGHAM.		LONDON.	ENGLAND AND WALES.
	Samples per Annum.	Percentage of Adulteration.	Percentage of Adulteration.	Percentage of Adulteration.
1873-81	10	14	15*	19*
1882-86	18	43	16	18
1887-91	23	37	12	15
1892-96	55	6	11	11
1892	36	0	11	15
1893	40	0	11	12
1894	57	7	9	10
1895	90	9	13	10
1896	53	9	12	9
1897	142	15	†	†

* 1877-81 only.

† Not yet available.

COCOA.

Each of the thirteen samples of cocoa was adulterated with large quantities of sugar and sago or arrowroot. Cocoa naturally contains about half its weight of cocoa-butter or fat, and the advantage of the addition of starch and sugar is said to be that they prevent the fat rising to the top of the beverage and promote its digestion. As a matter of fact, a large proportion of the fat is removed from the cocoa before the addition of the starch and sugar; the cocoa is therefore doubly adulterated, first by the removal of part of a valuable ingredient, and second, by the addition of large quantities of foreign substances. Such articles should be sold as cocoa mixtures and properly labelled. I consider that a vendor has no more right to sell as "cocoa" a preparation of which only half, or less than half, is genuine cocoa, than to sell as "coffee," an article containing fifty per cent. of chicory. In two cases alkali had been used in the preparation of the cocoa, one of them also containing a small quantity of oxide of iron. All the vendors were prosecuted and fined.

NO.	DATE.	ADULTERATION.	ACTION.
394	April 29th	Sugar 40%, sago 10%	Fined £2 and 8s. costs.
399	,, 29th	Sugar 40%, sago 10%	Fined £1 and 8s. costs.
478	May 28th	Sugar 40%, sago 15%	Fined £2 and 11s. costs.
481	,, 28th	Sugar 40%, arrowroot 30%	Fined £2 and 9s. costs.
483	,, 28th	Sugar 40%, sago 15%	Fined £2 and 9s. costs.
487	,, 29th	Sugar 35%, sago 15%	Fined £2 and 9s. costs.
527	June 15th	Sugar 35%, arrowroot 30%	Fined £5 and 9s. costs.
528	,, 15th	Sugar 35%, arrowroot 30%	Fined £2 and 10s. costs.
532	,, 15th	Sugar 35%, arrowroot 30%	Fined £2 and 9s. costs.
536	,, 17th	Sugar 40%, arrowroot 20%	Fined £2 and 9s. costs.
572	July 5th	Sugar 40%, arrowroot 15%	Fined £2 and 9s. costs.
589	,, 6th	Sugar 35%, arrowroot 15%	Fined £2 and 9s. costs.
593	,, 6th	Sugar 25%, arrowroot 10%	Fined £2 and 10s. costs.

SPIRITS.

Twenty-four samples of spirits have been examined, *viz.*, nine each of Scotch and Irish whiskey, and six of gin. Two of the samples of *Scotch whiskey*, Nos. 1085 and 1089, and one *Irish whiskey*, No. 515, were below the legal standard, *viz.*, 75 per cent. of proof spirit. The other samples of whiskey contained 76 to 86 per cent. of proof spirit. The samples of *gin* were all above the legal standard—65 per cent. of proof spirit.

Below are given particulars of the adulterated samples of whiskey and a table showing how Birmingham compares with London and England and Wales, but it must be borne in mind that here the proportion of spirits analysed, though slightly larger than the previous year, is very small as compared with the country generally.

NO.	DATE.	ADULTERATION.	ACTION.
515	June 11th	Water in excess 3½%	Cautioned.
1085	Dec. 17th	Water in excess 2½%	Cautioned.
1089	,, 17th	Water in excess 9%	Fined £1 and 8s. costs.

TABLE G.—SPIRITS.

YEARS.	BIRMINGHAM.		LONDON.	ENGLAND AND WALES.
	Samples per Annum.	Percentage of Adulteration.	Percentage of Adulteration.	Percentage of Adulteration.
1873-81	6	54	19*	35*
1882-86	7	23	11	22
1887-91	6	13	11	19
1892-96	21	16	13	18
1892	24	4	19	19
1893	9	11	15	20
1894	32	25	14	18
1895	24	21	10	17
1896	18	11	8	16
1897	24	12	†	†

* 1877-81 only. † Not yet available.

BEER, ALE.

Two of the thirteen samples of *beer*, Nos. 1101 and 1102, and the single sample of *ale*, No. 1144, contained a large excess of salt. They were all purchased from one vendor. Another sample, No. 1145, contained rather too much, but, as there is no legal standard for the amount of salt permissible, I was not able to certify it as adulterated.

During the previous twenty-four years I have received 736 samples of beer and ale. The average amount of chlorides expressed as salt was 29 grains per gallon, 86 per cent. of them did not exceed 50 grains, and 9 per cent. more were between this figure and 70 grains. These facts appear to indicate that the old Excise limit of 50 grains per gallon was, as far as Birmingham is concerned, a very fair standard, and that anything above 70 grains per gallon should certainly be considered an adulteration.

Below is given particulars of the adulterated samples, and a table which shows that fewer samples than usual were taken in Birmingham last year, and that the proportion containing excess of salt was much larger than in recent years. The figures for London, and England and Wales indicate a lower percentage of adulteration than Birmingham, though, in the absence of a legal standard, the figures are not exactly comparable.

Apart from the presence of excess of salt or other preservatives in beer, little or nothing can be done under the Sale of Food and Drugs Acts as, in the words of the Report of the Food Products Adulteration Committee, " Under the existing law, beer may be prepared by brewing any substitute for malt with any substitute for hops, and it would therefore be difficult to pronounce a beer adulterated except on the ground that it contained an ingredient which could not be regarded as a substitute for either malt or hops.

NO.	DATE.	CHLORIDES EXPRESSED AS SALT.	ACTION.
1101	Dec. 21st	117 grains per gallon	Same vendor as No. 1144. No action owing to informality.
1102	,, 21st	112 grains per gallon	Same vendor as No. 1144. No action owing to informality.
1144	,, 30th	124 grains per gallon	Fined £2 and 12s. costs.

TABLE H.—BEER, ALE.

YEARS.	BIRMINGHAM.		LONDON.	ENGLAND AND WALES.
	Samples per Annum	Percentage of Adulteration‡	Percentage of Adulteration.	Percentage of Adulteration.
1873-81	9	9	2*	5*
1882-86	45	3	1	3
1887-91	55	2	1	3
1892-96	32	11	3	7
1897	14	28	†	†

* 1877-81 only. † Not yet available.

‡ Samples containing more than 70 grains per gallon of chlorides expressed as salt.

PEPPER.

No adulterant was detected in any of the twenty-one samples of white pepper. A few years ago adulterated pepper was not uncommon, the following table, however, shows that the sale of sophisticated pepper in the country generally is very rare.

TABLE J.—PEPPER.

YEARS.	BIRMINGHAM.		LONDON.	ENGLAND AND WALES.
	Samples per Annum.	Percentage of Adulteration.	Percentage of Adulteration.	Percentage of Adulteration.
1873-81	9	12	*	*
1882-86	52	17	*	*
1887-91	38	22	10·3	7·5
1892-96	41	4	1·8	1·0
1892	38	3	3·1	1·8
1893	40	13	2·1	1·6
1894	48	4	0·6	0·6
1895	67	0	1·7	0·5
1896	26	0	1·8	0·5
1897	21	0	*	*

* Not available.

GINGER.

The six samples of *ground ginger* were of satisfactory quality, neither containing excess of mineral matter, nor being adulterated with spent ginger. One of the twenty samples of *root ginger*, No. 836, had been deprived of at least 25 per cent. of its strength, probably by soaking in water. The vendor was fined 5s., and 11s. costs. Sixteen others had been coated with 1 to 2 per cent. of a mixture of lime and lime salts, either carbonate or sulphate. This whitewashing is unnecessary and undesirable, but not sufficiently objectionable to be called adulteration.

In the years 1894-6, 12 per cent. of the samples analysed in Birmingham, and 7 per cent. of those analysed in England and Wales were adulterated.

CHEESE.

Two of the four samples of cheese were adulterated, the butter fat that should have been present having been replaced with foreign fat. This form of adulteration has not, as far as my experience goes, been common in cheese sold in Birmingham, as only one sample of the eighty-one examined in the previous ten years was sophisticated in this way. Three per cent. of the samples examined in England and Wales during the years 1893-6 were adulterated.

The following were the adulterated samples :—

NO.	DATE.	ADULTERATION.	ACTION.
714—	Sept. 18th ...	Foreign Fat, 30% ..	Fined £5 and 11s. costs.
826—	Oct. 16th ...	Foreign Fat, 30% ...	Fined £10 and 22s. costs.

SUGAR.

The nine samples of *Demerara sugar* were all genuine, as also were ten of the eleven samples of *granulated sugar*, but sample No. 2 received on January 4th, from a private purchaser, proved to be adulterated in a novel way. This sample differed very little in appearance from genuine sugars, but on boiling with water a large proportion of the crystals remained undissolved, and on analysis they were found to be carbonate of lime. In the manufacture of sugar a small quantity of slaked lime is added to the juice, converted into calcium carbonate by carbonic acid gas, and remains behind with the impurities when the clarified juice is removed. An exceedingly small amount of calcium carbonate in powder might therefore be found in a genuine sugar, but the presence of comparatively large crystals showed that fraudulent addition had taken place. I certified that 25 per cent. of calcium carbonate in crystals was present; the vendor was fined £5 and 15s. costs.

In the previous ten years, 20 per cent. of the samples examined in Birmingham, and 4 per cent. of the samples examined in England and Wales, were found to be adulterated.

OTHER FOODS.

Twenty-nine samples of *flour*, twenty-two of *bread*, eight of *vinegar*, six of *sago*, and five of *oatmeal* all proved to be genuine; the single samples of *pork pie*, *sausage*, and *polony* were free from boric acid.

II.—SAMPLES OF DRUGS.

The first of the following tables (K) gives a list of the samples of drugs analysed last year classified as genuine and adulterated. The second table (L) gives particulars for past years of the percentage of drugs found to be adulterated in Birmingham as well as in London, and in England and Wales.

Table K.—Samples of Drugs.

	No of Samples Analysed	No. found to be Genuine.	No. found to be Adulterated.
Prescriptions—Mixtures	28	22	6
Camphor Liniment	15	11	4
Glycerine	12	10	2
Prescriptions—Pills	8	7	1
Spirit of Nitrous Ether	6	4	2
Tincture of Rhubarb	6	5	1
White Precipitate Powder	5	5	0
Beeswax	5	4	1
Cream of Tartar	5	5	0
Carbonate of Iron Pills	5	3	2
Iodine Liniment	4	3	1
Sal Volatile	4	4	0
Extract of Malt	3	3	0
Paregoric	1	1	0
Seidlitz Powder	1	1	0
	108	88	20

Table L.—Drugs.

Years.	Birmingham.		London.	England and Wales.
	Samples per Annum.	Percentage of Adulteration.	Percentage of Adulteration.	Percentage of Adulteration.
1873–76	6	39	6†	19*
1877–81	6	21	11	22
1882–86	15	29	8	14
1887–91	89	15	7	13
1892–96	103	24	6	12
1892	127	27	16	20
1893	100	27	5	11
1894	148	20	4	11
1895	75	23	4	11
1896	67	24	6	11
1897	108	19	†	†

* 1876 only. † Not yet available.

Owing to the number of medical prescriptions analysed last year, more samples of drugs were examined than in either of the two previous years. The percentage of adulteration, though lower than in any recent year, is still much higher than in London or in England and Wales as a whole; the reason probably being that in Birmingham the drugs most likely to be defective are taken in preference to articles which past experience has shown are less liable to be adulterated.

MEDICAL PRESCRIPTIONS.

During the year a considerable amount of attention has been given to the examination of the accuracy with which medicines are dispensed in this City. On May 4th I received thirty-six samples, and on July 16th twenty-four samples of medicines of various kinds prepared according to eleven different prescriptions. In three cases simple Pharmacopœia preparations were ordered—viz., camphor liniment, iodine liniment, and carbonate of iron pills. The other prescriptions had to be specially prepared by the pharmacist. Of the 60 samples received 14, or 23 per cent., differed so much from what was ordered by the prescription that I had to certify them as adulterated. Fifty-two of the samples were obtained from persons qualified under the Pharmacy Act; of these eleven were condemned. Eight samples were obtained from unqualified vendors; of these three were condemned.

Iodide of Potassium and Cinchona Mixture.—Seven samples of the mixture containing iodide of potassium and liquid extract of cinchona were received, four of which were of the correct composition or nearly so. No. 404 only contained 75 per cent. of the amount of iodide of potassium ordered, and was also deficient in cinchona. No. 414 contained only 85 per cent. of the proper amount of iodide of potassium, and No. 406 had an excess of 10 per cent. of this drug.

Butyl-chloral Hydrate Mixture.—One of the six mixtures containing butyl-chloral hydrate, glycerine, and tincture of cardamoms was somewhat deficient in strength, but owing to the absence of an adequate official standard of purity of the active ingredient, I could not call it adulterated. Four of the samples were purple in colour, and two were brown; this great difference in appearance is due to the British Pharmacopœia allowing butyl-chloral hydrate to be neutral or slightly acid in reaction, to the presence of tincture of cardamoms, and to ordinary water being used. The Pharmacopœia requires that "in dispensing prescriptions, *aqua* should be understood to mean distilled water."

Magnesia Mixture.—Three of the four magnesia mixtures contained from 462 to 485 grains of sulphate of magnesia in the eight ounce mixture ordered, but No. 643 only contained 441 instead of 480 grains. This was probably due to the dispenser erroneously supplying an avoirdupois ounce of 437·5 grains instead of an apothecaries ounce of 480 grains. The vendor was cautioned by the Health Sub-Committee.

Quinine Mixture.—Three of the four quinine mixtures contained a slight excess of sulphate of quinine; No. 648 contained an excess of 18 per cent. I considered this amount too much to be passed as genuine, and the vendor was cautioned by the Health Sub-Committee.

Sodium Bromide Mixture.—The prescription ordered 180 grains of sodium bromide to be present in an eight ounce mixture, but as the British Pharmacopœia allows a slightly damp salt to be used, the three mixtures containing 168 to 178 of actual sodium bromide were passed as genuine. The fourth sample only contained 160 grains, and the vendor was cautioned by the Health Sub-Committee.

Morphia Mixtures.—Three mixtures were prepared from a prescription ordering a quantity of morphia too small to admit of analysis.

Camphor Liniment.—Four of the fifteen samples contained only half to three quarters of the camphor that should be present, another was slightly low in camphor, and the remainder were of satisfactory quality. One of the defective samples had not been prepared with olive oil as is required by the British Pharmacœpia.

The following were the adulterated samples:—

NO.	DATE.	ADULTERATION.	ACTION.
407	—May 4th	Camphor deffcient 25%	No action.
415	— „ 4th	Camphor deficient 25%, not prepared with olive oil	No action.
417	— „ 4th	Camphor deficient 25%	No action.
638	—July 16th	Camphor deficient 50%	Fined £1 and 10s. costs.

Iodine Liniment.—Each of the four samples contained about the correct quantity of iodine, but No. 640 was deficient of 16 per cent. of the iodide of potassium ordered by the British Pharmacœpia. The vendor was cautioned by the Health Sub-Committee.

Carbonate of Iron Pills.—Three of the five samples of carbonate of iron pills were correctly dispensed, but No. 422 contained only 25 per cent. of the carbonate of iron that should have been present: this deficiency was not due to deterioration by oxidation. No. 438 consisted of iron, or Blaud's pills, instead of carbonate of iron pills. Although the two preparations are similar in nature, the substitution of one for the other cannot be justified.

Iron and Quinine Pills.—The four samples of iron and quinine pills contained the correct amount of quinine, but No. 439 contained an excess of 80 per cent. of sulphate of iron. This may have been due to the dried salt having been used in error.

Opium, etc., Pills.—Four samples of pills were made from a prescription ordering squill, ammoniacum, benzoic acid, balsam of Peru, and opium. Owing to the complexity of the ingredients and the small quantity—ten grains—received, analysis was impossible.

Glycerine.

Twelve samples were analysed and in four of them minute traces of arsenic were found, probably owing to slight impurities in the chemicals used in their manufacture. Glycerine for medicinal use should be quite free from arsenic, but the quantity present was too small to be considered adulteration. Two samples contained glucose or starch syrup, a cheap substance used in confectionery, which is free from the medicinal qualities of glycerine and quite different in its nature. As starch syrup is denser than glycerine its presence enables a certain amount of water to be added without reducing the density of the sample below that of genuine glycerine. None of the fifty samples examined in past years have been adulterated in this way. The following were the adulterated samples:—

NO.	DATE.	ADULTERATION.	ACTION.
93	Jan. 29th	Dilute glucose syrup 40%	Fined £5 and 9s. costs.
120	Feb. 4th	Dilute glucose syrup 45%	Fined £5 and 10s. costs.

SPIRIT OF NITROUS ETHER.

The British Pharmacopœia requires that this drug shall yield "when freshly prepared, seven times its volume of nitric oxide gas; and even after it has been kept some time and the vessel containing it has occasionally been opened, it should yield not much less than five times its volume of the gas." Four of the six samples yielded under standard conditions from five to seven volumes of nitric oxide gas, but two were seriously deficient, yielding only three and a half volumes and one volume of gas respectively. As spirit of nitrous ether is a drug liable to deterioration, it is advisable that the stock should be kept in a cool dark cellar and not obtained in too large quantities, and that the shop bottle should not contain more than can be sold in a short period of time. That the official requirements are not unnecessarily exacting is shown by the fact that none of the seven samples examined last year were deficient in strength. In the years 1894-6 twenty-nine per cent. of the samples examined in England and Wales were reported to be adulterated.

NO.	DATE.	ADULTERATION.	ACTION.
21	Jan. 12th ...	Ethyl nitrite deficient 30%	Cautioned.
27	" 12th ...	Ethyl nitrite deficient 80%	Cautioned.

TINCTURE OF RHUBARB.

If this tincture is properly made according to the British Pharmacopœia one pint should contain about one ounce of solid ingredients, and less than 0·9 ounce should rarely be present. All the samples obtained during the last two years have been genuine, the average amount of solid ingredients being 0·96 ounce per pint. Five of the six samples, received on January 12th, contained more than the lower quantity, but in No. 24 only 0·75 ounce per pint was present, it was certified to be deficient of 16 per cent. of solid ingredients, and the vendor was cautioned by the Health Sub-Committee. During the previous five years sixteen per cent. of the samples examined in Birmingham were condemned, being the same proportion as that found in England and Wales during the years 1894-6.

BEESWAX.

Three of the five samples of beeswax were genuine, another was nearly so, containing a small quantity of stearic acid, while No. 373 was certified to be adulterated with at least 25 per cent. of paraffin wax, and at least 10 per cent. of resin. It was composed of two pieces, one of which was chiefly resin and paraffin wax, the other was adulterated with a little tallow and about one-third of its weight of paraffin wax. The vendor was fined 1s. and 8s. costs One-third of the samples examined in England and Wales during the years 1895-6 were adulterated.

OTHER DRUGS.

The five samples of *cream of tartar* all contained traces of lead, but not enough to be called adulteration. One of the four samples of *sal volatile* was slightly deficient in strength. Three samples of *extract of* *malt* were not altogether satisfactory in quality, but as there is no standard for the preparation given in the British Pharmacopœia I could not call them adulterated. Five samples of *white precipitate*, and the single sample of *paregoric* and *Seidlitz powder* were of the correct composition.

III.—LEGAL PROCEEDINGS UNDER THE FOOD AND DRUGS ACT.

Your Committee cautioned the vendors of adulterated articles in 39 cases, and prosecuted in 112 others. In 106 instances fines were inflicted by the magistrates, five persons were ordered to pay the costs of the prosecution only, and one prosecution was withdrawn owing to the defendant being a chronic invalid.

The first of the following tables shows what articles were found to be adulterated last year, with the proceedings taken and the amount of the fines inflicted. The second table gives particulars of the legal proceedings taken in previous years. It will be noticed that the total amount of fines and costs was much higher than in any previous year.

TABLE M.—LEGAL PROCEEDINGS.

ARTICLE.	ADULTERATED.	CAUTIONED.	FINED.	AMOUNT OF FINES		
				£	s.	d.
Butter	119[†]	0	27	77	15	0
Milk	82[‡]	27	38	58	6	0
Coffee	21	3	18	29	15	0
Cocoa	13	0	13	28	0	0
Prescriptions—Mixtures	6	3	0		—	
Camphor Liniment	4	0	1	1	0	0
Prescriptions—Pills	3	0	0		—	
Glycerine	2	0	2	10	0	0
Spirit of Nitrous Ether	2	2	0		—	
Cheese	2	0	2	15	0	0
Beer	2	0	0		—	
Scotch Whiskey	2	1	1	1	0	0
Irish Whiskey	1	1	0		—	
Tincture of Rhubarb	1	1	0		—	
Iodine Liniment	1	1	0		—	
Beeswax	1	0	1	0	1	0
Granulated Sugar	1	0	1	5	0	0
Root Ginger	1	0	1	0	5	0
Ale	1	0	1	2	0	0
	265[‖]	39	106[*]	£228	2	0

[*] Five other vendors were ordered to pay the costs of prosecution only.
[†] Boric acid was the only adulterant found in 92 samples.
[‡] Boric acid and formic aldehyde were the only adulterants found in 27 samples.
[‖] Boric acid and formic aldehyde were the only adulterant found in 119 samples

TABLE N.—LEGAL PROCEEDINGS UNDER THE FOOD AND DRUGS ACTS.

Years.	Number per Annum in Birmingham.												England and Wales.		
	Adulterated Samples.	Cautions.	Prosecutions.	Amount of Fines.			Amount of Costs.			Average Fine.			Average Fine.		
				£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
1873-76	39	2	13	8	16	3		‡		0	16	1		‡	
1877-81	45	3	18	22	19	0		‡		1	8	4		‡	
1882-86	100	31	35	30	7	1		‡		1	0	0		‡	
1887-91	107	24	33	51	15	5		‡		1	15	11	1	8	8
1892-96	129	39	68	98	7	4		‡		1	12	9	1	15	3
1892	134	50	53	44	17	0		‡		0	19	6	1	16	2
1893	132	49	49	51	8	0	21	13	0	1	4	6	1	17	11
1894	124	27	68	120	6	0	29	4	0	1	18	10	1	15	7
1895	130	31	86	124	18	6	41	6	6	1	12	5	1	15	9
1896	213*	79	85	150	18	0	40	4	0	2	0	3	1	10	9
1897	265*	39	112	228	2	0	50	18	0	2	3	0		‡	

* 125 if samples of food adulterated with preservatives only are excluded.
† 146 if samples of food adulterated with preservatives only are excluded. ‡ Not available

IV.—MARGARINE ACT.

Twenty samples were taken during the year for offences against this Act. Either the sample was exposed for sale without being labelled "Margarine," or because it was wrapped in plain paper, or because the cask containing it was not properly branded. In one case, a sample declared by the vendor to be margarine was, on analysis, found to be butter. Boric acid was present in fifteen of the remaining nineteen samples. The following table shows the results of the actions taken under this Act during past years.

TABLE O.—MARGARINE ACT.

Year.	Samples.	Cautions.	Prosecutions.	Amount of Fines.			Average Fine.		
				£	s.	d.	£	s.	d.
1889	1	0	1	1	0	0	1	0	0
1890	2	1	1	0	5	0	0	5	0
1891	4	0	4	5	10	0	1	7	6
1892	2	1	1		...			...	
1895	1	0	0		...			..	
1896	20	4	16	59	0	0*	3	13	9
1897	20‡	0	14	29	15	0†	2	5	9

* The costs of the prosecutions were £6 12s. 0d.
† The costs of the prosecutions were £5 16s. 0d.
‡ One sample was butter.

Below is given a list of the samples of margarine taken; the first five were obtained from one wholesale dealer, but legal action was not considered advisable.

NO.	DATE.	ACTION.
11—	Jan. 7th	No action.
12—	,, 7th	No action.
13—	,, 7th	No action.
14—	,, 7th	No action.
15—	,, 7th	No action.
60—	,, 21st	Fined £2 and 8s. costs.
61—	,, 21st	Fined £5 and 8s. costs.
155—	Feb. 16th	Fined 5s. and 8s. costs.
185—	,, 22nd	Fined £2 and 8s. costs.
264—	March 20th	Ordered to pay costs amounting to 5s.
297—	,, 31st	Fined £1 and 9s. costs.
792—	Oct. 7th	Fined £1 and 8s. costs.
793—	,, 7th	Fined £1 and 8s. costs.
798—	,, 12th	Fined £2 and 9s. costs.
934—	Nov. 10th	Fined £2 and 8s. costs.
984—	,, 19th	Fined £5 and 9s. costs.
1005—	,, 26th	Fined £5 and 10s. costs.
1035—	Dec. 8th	Fined £3 and 9s. costs.
1061—	,, 14th	Fined 10s. and 9s. costs.

I remain,
Mr. Chairman and Gentlemen,
Your obedient Servant,
ALFRED HILL, M.D., F.I.C.
City Analyst.

INDEX.

PAGE

Adulteration, Percentage of ... 71
Adulteration, Report on ... 71
Ages, Deaths at 44
Ale Analysed 81
Analyses, Miscellaneous ... 39
Area of City 42
Articles Analysed 39, 73
Ashpit Privies, Conversion of .. 33

Bakehouses 37
Beer Analysed 81
Births 4, 42
Birth-rate in Birmingham ... 4, 43
" Great Towns ... 4, 50
Beeswax Analysed 87
Boric Acid in Foods 73, 77
Butter Analysed 77

Canal Boats 36, 57
Cheese Analysed... 83
City Hospital, Cases Admitted... 14, 51
Closets Cleansed or Repaired ... 56
Cocoa Analysed 79
Coffee Analysed 78
Common Lodging Houses ... 35, 57
Contagious Diseases (Animals) Act 58
Continued Fever... 44, 48, 51, 52, 53
Cowsheds 36

PAGE

Dairies 36
Death-rate in Birmingham ... 4, 43
" Great Towns ... 50
Deaths 4, 42
" at various ætal periods ... 44
" from different causes ... 44, 49
Density of Population 43
Diarrhœa... ... ... 20, 44, 48, 50
" and Insanitary Yards and Privies ... 21
" and Want of Ventilation 24
" and Want of Paving 26
" and Pan and Ashpit Privies 26
" and Temperature ... 29
" at Small Houses ... 21
" at various ages ... 21
" Causes of 22
" in Wards 21
Diphtheria ... 15, 44, 48, 50, 51, 52, 53
" and Antitoxin ... 16
" and Bacteriological Examination ... 16
" and Hospital Accommodation ... 17
Diseased Meat 37
Disinfection 57
Drains 34, 56
" Not Connected with Sewers 34
Drugs Analysed 84

PAGE

Enteritis 20, 46
Erysipelas 44, 51, 52, 53

Food and Drugs Analysed .. 73
" Act, Proceedings under... ... 71, 88
" Unwholesome 37
Formic Aldehyde in Milk . 73, 77

Gin Analysed 80
Ginger Analysed ... 83
Glycerine Analysed 86

Hospital, City, Cases Admitted 14, 51
Houses Cleansed and Repaired 32, 56
Houses Let in Lodgings ... 35, 57
Houses, Need of More Small ... 31
" Unhealthy 32
Houses without Suitable Pantries 32
Housing of Working Classes Act, Proceedings under 31

Infant Mortality in Birmingham 42, 43
" in Great Towns 50
Infectious Diseases 10, 44, 48, 50, 51, 52, 53
Influenza 44
Inhabited Houses 4, 42
Institutions, Mortality in 42, 43, 44, 67

Keeping of Animals 33, 56

Lodging Houses 35, 57

PAGE

Margarine Act, Proceedings under... 89
Marriages 4, 42
Marriage-rate 4, 43
Measles 12, 44, 48, 50
" Handbill... 13
Meat, etc., Unfit for Food ... 37, 58
Medical Prescriptions Analysed 85
Membranous Croup 44, 48, 51, 52, 53
Meteorological Observations . 54, 55
Meteorology and Mortality ... 29
Milk Analysed 73
Milk Shops 36

Nuisances, Abatement of .. 56

Offensive Trades 39

Pan Privies, Conversion of ... 33
Paving of Courts and Yards ... 33
Pepper Analysed... 82
Population 4, 43
Puerperal Fever 44, 51, 52, 53

Rainfall 54, 55
Relapsing Fever 51

Sanitary Staff 30
Sanitary Work Done 7, 56
" Required ... 7
Scarlet Fever 14, 44, 48, 50, 51, 52, 53
" at Harborne ... 14
Sink Drains 34
Slaughterhouses 37
Smallpox ... 10, 44, 48, 50, 51, 52, 53

PAGE

Smoke Nuisances 38
Spirit of Nitrous Ether Analysed 87
Streets and Roads, Deaths in ... 62
Sugar Analysed 83
Sunshine 54

Temperature 54, 55
Tincture of Rhubarb Analysed 87
Typhoid Fever 18, 44, 48, 51, 52, 53
" and Hospital Accommodation... 19
" and Water Supplies 19
Typhus Fever 20

Vaccination 11, 59
" Value of 11

PAGE

Wards, Death-rates in 9
" Deaths in 44
" Populations of 9
Water Supply 38, 60
Well Waters 38, 60
Whiskey Analysed 80
Whooping Cough... ... 18, 44, 48, 50
" Suggested Procedure as to 18
Workshops 36, 58

Zymotic Death-rate in Birmingham 10, 43
" Death-rate in Great Towns 10, 50
" Diseases 10, 42, 44, 48, 51, 52, 53

ROYAL STATISTICAL SOCIETY
6- JUN 93